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Service

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# **South of Route 9 Integrated Resource Project**

## **Scoping Information**

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Green Mountain National Forest  
Towns of Bennington, Pownal, Readsboro, Stamford, and  
Woodford; Bennington County, VT; Whitingham, Windham  
County, VT; and Clarksburg, Florida, and North Adams,  
Berkshire County, MA.**



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# **I. INTRODUCTION**

The USDA Forest Service is proposing to implement management activities (proposed action) on the Green Mountain National Forest collectively named the South of Route 9 Integrated Resource Project (South of Route 9 Project). The Green Mountain National Forest (GMNF) Land and Resource Management Plan (Forest Plan) describes the “local” resource goals and objectives and guides the day-to-day resource management operations for the Forest. “Implementing the Forest Plan” means developing and implementing site-specific level forest management projects in an effort to reach Forest Plan desired future conditions. Forest Service activities such as those proposed in the South of Route 9 Project must follow regulations established by the National Environmental Policy Act of 1969 (NEPA) prior to implementation.

Compliance with NEPA at the project level includes the disclosure of environmental effects of proposed activities, public participation, and preparation of a decision document that provides specific direction for project implementation. The environmental analysis for management activities proposed in the South of Route 9 Project will be documented in a site-specific Environmental Assessment (EA).

## **Public Scoping**

The NEPA process provides for public “scoping” to help identify important issues of concern associated with the proposed action. Issues guide the focus of the site-specific environmental analysis and help identify the range of alternatives and mitigations that will address those issues. The resulting EA will provide a basis for selection of the management activities to implement within the South of Route 9 project area that address public issues and meet desired resource conditions provided by Forest Plan direction.

## **South of Route 9 Project Area Location**

The South of Route 9 project area is located in the Deerfield River, Hoosic River, and Walloomsac River watersheds primarily within the Towns of Pownal, Readsboro, and Stamford, Vermont; and Clarksburg, Massachusetts (refer to Map 1). Small portions of the project area are also within the Towns of Bennington, Woodford and Whitingham, Vermont; and Florida and North Adams Massachusetts. The project area is bounded primarily by the State Route (SR) 100 and State Route (SR) 8, Old Stage Trail [Forest Road (FR) 73 and Forest Trail (FT) 391], and Gore Road [Town Highway (TH) 54] on the north; South Stream RD, Barber Pond RD (both TH 3), Hidden Valley Road (TH 33), South Stream-Walloomsac watershed, and Mason Hill Road (TH 40) on the west; the Massachusetts state line and the North Branch Hoosic River watershed on the south; and SR 100 and Tunnel ST on the east.

The project area encompasses approximately 62,281 acres with 36,084 acres (57.9 percent) in private ownership, 118 acres (0.2 percent) managed by the State of Vermont (Bennington Hatchery), 2393 acres (3.8 percent) managed by the State of Massachusetts (Clarksburg State Forest, Florida State Forest, Monroe State Forest, Savoy Mountain State Forest, Clarksburg State Park, and Natural Bridge state Park, and 1106 acres (1.8 percent) in town ownership (Bennington Town Forest, Bennington Village Forest and Readsboro Town Forest). The remaining area (22,580 acres, 36.3 percent) is National Forest System (NFS) lands administered by the Forest Service.

<b>Land Ownership/Management within the South of Route 9 Project Area</b>	<b>Acres<sup>1</sup></b>	<b>% of Total</b>
National Forest	22,580	36.3
Vermont State	118	0.2
Massachusetts State	2393	3.8
Town	1106	1.8
Private	36,084	57.9
<b>Total</b>	<b>62,281</b>	<b>100</b>
<sup>1</sup> Approximate.		

The NFS lands within the project area consist of all or portions of 20 Compartments (C) 120, 125, 127 to 129, 130, 135, 138, 141, 148, 161 to 169, and 180. Forest Compartments are administrative land units averaging approximately 1,500 acres. Compartments are divided into Stands (S) which consist of similar vegetation and site conditions. Specific locations can be identified on maps by their Compartment and Stand number combination. For example, C120/S9 is Stand 9 within Compartment 120.

## Project Area Background

The South of Route 9 project area has a mix of land ownerships and uses, and is served by an extensive network of Forest Service, Town and private roads. SR 100 forms much of the eastern project area boundary and SR 100 and SR 8 go through the project area from north to south to North Adams, Massachusetts. Private lands dominate the area east of the project area, the area along SR 100 and SR 8 and the southeast portion of the project area. The vast majority of NFS lands are along the southern spine of the Green Mountains in the eastern part of the project area, and in the Hoosac Range along the eastern side of the project area in the Town of Readsboro. The center portion of the project area contains large wetland complexes in the Towns of Stamford and Woodford. While development in and adjacent to the South of Route 9 project area is concentrated around the village centers of Pownal, Readsboro, Stamford and Woodford; the town center of Bennington, and along SR 100 and SR 8; residences and farms are scattered throughout the project area on private lands. The intermixing of NFS, Town, and private lands offers an opportunity to manage resources cooperatively across landowner boundaries.

Elevations in the South of Route 9 project area range from over 3,000 feet on Houghton Mountain along the spine of the Green Mountains to elevations near 750 feet along the Hoosic River in North Adams Massachusetts. The area lies in portions of three watersheds: Hoosic River, Deerfield River and Walloomsac River. Water resources throughout the South of Route 9 project area consist of cool, headwater mountain streams, wide, valley bottom streams, and wetland complexes across the landscape that are highly valued by residents and visitors. The area is natural appearing with mountainous terrain typified by the Dome, Houghton Mountain and the Hoosac Range, and the village and pastoral/farm setting in the valleys.

Both NFS and non-NFS lands are mostly forested consisting of northern hardwood and softwood species. Timber harvesting has occurred on all ownerships within the project area and has helped shape the forest type and age class composition throughout the landscape. Openings of various sizes are typical on private lands for homes, crops and pastures. The South of Route 9 project area has a long history of active timber and wildlife management on lands now owned by the NFS but previously in private, municipal or State ownership. Many of the NFS lands in the project area have been acquired in the past 15 years and these lands were

managed for timber, wildlife habitat and/or municipal watershed prior to Forest Service (FS) acquisition.

The primary recreation opportunities offered within the project area include hiking, snowmobiling, cross country skiing, biking, horseback riding, hunting, fishing, dispersed camping, picnicking, and viewing wildlife and natural features. Areas of special interest include: the Appalachian National Scenic Trail and Long National Recreation Trail (AT/LT) in the center portion of the project area at the crest of the Green Mountains, Lion's Club Park in Readsboro and Clarksburg State Park and Natural Bridge State Park both in Massachusetts. There are two FS system snowmobile trails FT 391 (Corridor 9) on the northern boundary and FT 394 (Stamford Pond) in the central project area. Old non-system roads used for hiking, snowmobile and summer motorized vehicle trails lead to Lake Hancock (Sucker Pond) and Stamford Meadows; non-system snowmobile and hiking trails, and legal town trails exist on the Hoosac Range. There are non-system hiking trails in the Dome and Broad Brook area.

Hunting within the project area is actively pursued by visitors and residents alike due to the prime habitat it provides for a variety of small and large game species. Fishing is also a popular attraction to the area with fishing in local streams and the Deerfield River where native and stocked brook, rainbow and brown trout are available.

## Forest Plan Management Direction

The individual management activities that collectively define the South of Route 9 Project proposed action have been developed with direction found in the GMNF 2006 Land and Resource Management Plan (Forest Plan). The South of Route 9 Project is designed to move the existing conditions of NFS lands within the project area towards the Desired Future Conditions (DFC) as directed in the Forest Plan. The GMNF is designated to different Management Areas (MAs) with each having a major emphasis and DFC, and provides specific management direction for activities needed to achieve Forest Plan goals and objectives.

The NFS lands in the South of Route 9 project area fall within five MAs although the vast majority is allocated to the Diverse Forest Use and Diverse Backcountry MAs (94.6 percent of FS lands within the project area). Refer to Maps 1, 2 and 3 for MA locations within the project area. A brief description of where each MA is located follows the table below.

Forest Plan Management Area	Acre <sup>1</sup>	% of Total
Diverse Forest Use	4,844	21.5
Diverse Backcountry	16,496	73.1
Appalachian National Scenic Trail	1088	4.8
Ecological Special Areas	152	.7
Eligible Wild, Scenic and Recreational Rivers <sup>2</sup>	546	
<b>Total</b>	<b>22,580</b>	<b>100</b>
<sup>1</sup> Approximate.		
<sup>2</sup> Management area applies to stream corridors (1/4 mile each side of the stream) which overlay and run through all other management areas.		

1. Diverse Forest Use (Forest Plan, pp. 47 and 48): A majority of the land allocated to the Diverse Forest Use MA is located on the east side of the project area between SR 100/SR 8 and SR 100. There is also a small portion south of FT 391 on either side of the AT/LT.

2. Diverse Backcountry (Forest Plan, pp. 58 to 59): The majority of the NFS lands in the project area are allocated to Diverse Backcountry. The MA extends from the White Oaks RD in Pownal on the west to FR 363 (Burgess RD), and FT 391/FR 73 to the north.
3. Appalachian National Scenic Trail (Forest Plan, pp. 66 to 72): The land allocated to the Appalachian National Scenic Trail MA is from the Massachusetts State line in Pownal to FT 391(Corridor 9) in Woodford.
4. Ecological Special Areas (Forest Plan, pp. 94 to 97): The land allocated to Ecological Special Areas are Thendara Camp Fen, Stamford Stream Wetland Complex and Stamford Meadows, all located in the north central portion of the project area in Stamford and Woodford.

## **Public Involvement and Collaboration**

The South of Route 9 Project was initiated in the summer of 2013 in meetings with town officials from Bennington, Pownal, Readsboro, Stamford and Woodford, Bennington County Regional Planning Commission, community members, stakeholders and Vermont Department Forest Parks and Recreation (VFPR), Vermont Department of Environmental Conservation (VDEC), and Vermont Fish and Wildlife Department (VFWD) staff. Public collaboration meetings were held in November and December 2013 in Pownal, Readsboro and Stamford to present information on resource inventories that were conducted in the project area, share potential activities, and to provide an opportunity for public input on this information.

A number of field visits were held from 2012 through 2014 to: look at the botanical resources on the Dome; explore possible treatment activities on the Dome; examine stream and culvert conditions; and investigate possible trails and multiple uses in Readsboro, near Sucker Pond and on FT 391. The ideas for management activities developed through public collaboration and resource specialists' condition assessments were explored and expanded upon throughout 2013 and 2014. During this same time period, Forest Service staff collected more detailed inventory information to further verify and refine management activity options.

The Forest Service narrowed the list of potential project activities based on these efforts and presented them at a public meeting held in June 2014 in Woodford, VT at the Prospect Mountain Ski Area. Individuals, organizations, towns and agencies were invited to: 1) ask questions related to possible activities, 2) provide input on possible activities and 3) identify areas of particular interest in the project area including areas for future field visits. The additional feedback provided by the public during and after this meeting has resulted in the South of Route 9 Project proposed action contained in this scoping document.

The Forest Service is committed to continue working with the public to manage NFS lands within the South of Route 9 project area in a manner that address the most interests as possible while meeting the intent of the Forest Plan. The Forest Service is particularly interested in developing opportunities to create partnerships and volunteer organizations to implement project activity following the completion of the environmental analysis. Although the focus is primarily on project activity on NFS lands within the South of Route 9 project area, the Forest Service would also like to consider any opportunities to coordinate management on adjacent private, Town, and State lands to achieve common goals across land ownership boundaries.

## **Stewardship Contracting Opportunities**

Stewardship End Result Contracting (Stewardship contracting) is a tool to accomplish resource management projects by combining them into a package of contract or agreement opportunities. The projects are developed with public collaboration and focus on what's left behind or the "end

results” rather than on what’s removed from the land. Stewardship contracting allows for the revenues from timber sales to fund projects that improve forest health, restore or maintain water quality, improve fish and wildlife habitat, and reduce hazardous fuels. Many of the activities currently described in the South of Route 9 Project proposed action could be implemented with Stewardship contract funding. Stewardship contracting can also be used to implement qualified resource management activities on private land to complement those proposed on NFS lands. The Forest Service plans to continue public collaboration to develop Stewardship Contracting opportunities within the South of Route 9 project area.

## South of Route 9 Project Timeline

Following the scoping period initiated by this document, the Forest Service will identify issues or concerns from responses received from the public. The environmental effects from the proposed action and any alternatives developed to address public issues will then be documented in the Environmental Analysis (EA). It is anticipated that the preliminary EA will be ready for public review for a 30-day notice and comment period by **April 2015**. Changes or modifications to the preliminary EA will be included in a Final EA that is anticipated by **October 2015**. If it is determined that there are no significant effects resulting from the management activities proposed, a Decision Notice selecting which alternative to implement will accompany the Final EA.

## CFR 218 Pre-Decisional Objection Process

Recent rulemaking in 2013 replaced the post-decisional appeals process in place since 2003 (36 CFR 215) with a pre-decisional objection process (36 CFR 218) for EA level NEPA decisions. Rather than being able to file an “appeal” and seek higher-level administrative review of unresolved concerns after a project decision has been made, those who are eligible will now be able to file an “objection” and seek that review while the project decision is still in draft status.

The 36 CFR 218 regulations state that in order to be eligible to object under the Objections process, you will need to submit timely “specific written comments” (36 CFR 218.2) during any period “designated for public comment” (36 CFR 218.5(a)). The following public opportunities to submit written comments will be provided for this project:

- 1) Scoping Period: Comments submitted during the 30 day scoping period initiated by the September 2014 Scoping Notice will help determine issues specific to the proposed project that will be used to focus the environmental analysis for the resources of concern. The analysis will be documented in the preliminary EA.
- 2) 30-Day Notice and Comment Period: Comments submitted during the formal 30-day notice and comment period for the preliminary EA will be used to identify remaining issues with the proposal or associated environmental analysis so the EA can be finalized and a draft Decision Notice (DN) and Finding of No Significant Impact (FONSI) can be prepared. This 30-day period will be triggered by a legal notice in our newspaper of record, the *Rutland Herald*.



## II. PURPOSE AND NEED

This section provides the purpose and need for the proposed action within the South of Route 9 project area for the following resource categories:

1. Habitat Diversity
2. Timber
3. Botany
4. Non-Native Invasive Plants
5. Fisheries and Water
6. Soil and Wetlands
7. Recreation
8. Scenery
9. Transportation
10. Heritage

The pertinent Forest Plan goals, objectives and management direction for each resource category is the basis for defining the activities that may be implemented as part of the South of Route 9 Project. The purpose and need section answers the question: “why are management activities being considered for the South of Route 9 project area?” Identifying the opportunities that move the existing resource conditions within the project area toward the Forest Plan desired future conditions are the main function of defining the purpose and need.

### 1. Habitat Diversity

#### **Improve the Composition and Age Class Structure of Ecosystems**

Forest Plan Goal #2 is to “[m]aintain and restore quality, amount and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals” (Forest Plan, p. 10). In order to contribute to this goal, the Forest Plan identifies forest habitat type composition and age class objectives to ensure that diversity of composition, structure, and function is maintained or increased on the GMNF (Forest Plan, pp. 10 to 12).

While some of the composition and age class objectives can be met through natural processes, vegetation management is often used to restore and enhance diversity of habitat types and structures (Forest Plan, p. 15). Vegetation management is also used to enhance habitats and features of particular value to certain plant and animal species where that habitat is uncommon in the forest, such as aspen, upland openings, and oak. Within the South of Route 9 project area, these types of management actions would generally occur within the Diverse Forest Use and Diverse Backcountry Management Areas (MAs).

The Forest Plan states that management activities within the Diverse Forest Use and Diverse Backcountry MAs will provide suitable habitat for a variety of wildlife and plant species (Forest Plan, pp. 47 and 58). Activities within the Diverse Backcountry MA will also widen the diversity of habitats by enhancing the younger and older age classes through the use of both even-aged silvicultural methods and extended rotations (Forest Plan, p. 58). Both MAs identify a desire for variation in size, age, and tree species and both even-aged and uneven-aged harvest techniques will be used.

An assessment of habitat diversity within the South of Route 9 project area, called a “habitat management unit (HMU) analysis”, was conducted by Forest Service resource specialists in early 2014. The analysis was based on existing records as well as vegetation inventory data recently gathered in the project area. The purpose of this analysis is to apply Forest Plan

habitat type composition and age class objectives at the site-specific (HMU analysis) scale. Specific HMU objectives take into consideration the current condition and overall Forest Plan objectives, as well ecological conditions and long-term tendencies of ecosystems found in the project area. The difference between the current condition of the South of Route 9 HMU and the specific HMU objectives is the basis for identifying potential management activities within the project area. Based on this difference, stands can be identified for silvicultural treatment or other vegetation management to achieve HMU composition and age class objectives.

Tables 1 and 2 illustrate the following important gaps between the current and desired future condition for habitat composition and age class:

- An absence of regenerating age class (0-9 years old) across all habitats on suitable lands
- A substantial imbalance in desired composition among northern hardwood, mixedwood, and softwood habitat types, with northern hardwoods significantly over-represented
- An absence of aspen-birch habitat within lands suitable for vegetation management
- A lack of age class diversity within the substantial amount of oak habitat outside of the Escarpment MA, all of which is considered mature
- A large deficit in permanent upland opening habitat, particularly in suitable lands where these habitats can be maintained at desired levels.

In addition to these gaps, there are other habitat features and conditions within the project area that present opportunities or needs for management. These include:

- Improving structural diversity in areas with extended rotation requirements
- Enhancing deer wintering areas
- Managing of old apple orchards and trees
- Enhancing the abundance of large woody debris
- Protecting the integrity of significant wetlands
- Enhancing wildlife habitat on adjacent non-NFS lands

**Table 1: Comparison of important existing habitat composition conditions with HMU objective ranges within the South of Route 9 project area.**

Habitat Type <sup>1</sup>	HMU Objective (all NFS lands)		Existing Habitats (all NFS lands)		Existing Habitats (suitable lands) <sup>2</sup>	
	%	acres	acres	%	acres	% <sup>3</sup>
Northern Hardwoods	30-40	6,750-9,000	17,447	77	14,208	63
Mixedwood	45-55	10,150-12,400	2,576	12	1,371	6
Softwood (spruce/ fir and hemlock/ white pine)	15-25	1,150-2,250	705	3	378	2
Aspen/Birch	2-3	450-675	0	0	0	0
Oak	3-5	675-1,150	983	4	932	4
Upland Opening	2-3	450-675	152	1	52	<1
<b>Total</b>			<b>21,863</b>		<b>16,941</b>	

<sup>1</sup>Wetland habitats are excluded from the list of habitats presented here as they currently meet the desired future condition for composition in the project area.

<sup>2</sup>Represents habitat type abundance for all NFS lands in the South of Route 9 project area suitable for timber management; shown for context, as some habitat types (such as Upland Openings) require timber management to exist at the levels defined by the Forest Plan and Project objectives.

<sup>3</sup>Percent of all NFS acres that are suitable acres of this habitat type.

**Table 2: Comparison of the existing regenerating age class (0-9 years) with HMU objective range; and existing age class distribution for remaining age classes, within the South of Route 9 project area.**

Age Class (Includes All Forested Habitat Types)	HMU Objective <sup>1</sup>	Existing Condition (all NFS lands) <sup>2</sup>		Existing Condition (suitable lands) <sup>3</sup>	
		acres	%	acres	%
<b>Regenerating (0-9 years)</b>	<b>492 - 1,848</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Young	2,214 - 6,149	871	4	605	6
Mature	3,275 - 7,050	18,471	85	9,412	87
Old	468 - 4,538	2,370	11	820	7
<sup>1</sup> Acre range represents potential natural vegetation of suitable NFS lands assigned to an even-aged management status (60 to 80 percent of suitable lands), adjusted for conversions to or maintenance of existing aspen, birch, and openings. <sup>2</sup> Condition across all forested NFS lands within the South of Route 9 project area. <sup>3</sup> Applies only to NFS lands suitable for timber management and assigned to an even-aged management status prior to project development.					

### Regenerating/Early-Successional Habitat

Currently in the project area there are no stands identified on NFS lands of at least an acre in size that are in the regenerating (0-9 year old) age class (Table 2). This is related to an over-abundance of mature and old age class, which is a legacy of historical land use and abandonment of hill farms at the time the GMFL was established. If there are no regeneration harvests or large blow-downs in a landscape for more than 10 years, natural succession will lead to the loss of this short-lived structural condition.

Temporary or silvicultural openings are stands with substantial areas of regenerating vegetation created through timber harvests, especially shelterwood and clearcut harvests. Silviculturally, these treatments are prescribed to create or release regeneration of desired tree species. Although the objectives for these regeneration cuts are silvicultural, these temporary openings provide excellent early-successional habitat conditions that are important for many species of wildlife. Early-successional characteristics change gradually over time for as many as twenty years, at which time these benefits for wildlife habitat diminish. .

In addition to its wildlife value, the regenerating age class also creates structural diversity within a general forested area that is fairly uniform in terms of structure. Most of the NFS lands within the project area are of similar age and origin, although there is some variation in composition. As these forests age, they become more vulnerable to the depredations of insects, disease, and natural disturbances. Being all of a similar age, most of these NFS lands will therefore be vulnerable to these issues around the same time and over large expanses of land. The creation of temporary openings helps to create vertical and horizontal structure, reducing vulnerability by providing breaks in the forest canopy that are more likely to be skipped by insects and be protected from wind disturbance. The young trees that develop in these openings tend to be more vigorous and resilient than their elders in the canopy.

Within the South of Route 9 Project Area there is an opportunity to:

- Create regenerating and early-successional habitat up to between 492-1,848 acres across all habitat types through the use of regeneration harvesting.
- Complement and enhance the value of permanent upland openings with temporary, silvicultural openings that will revert over time to mature forest stands.

### **Hardwood/Mixedwood/Softwood Imbalance**

There is a significant imbalance in the proportion of northern hardwood, mixedwood, and softwood habitat types compared to the long-term composition objectives for the project area. Mixedwood and softwood habitats are substantially under-represented (Table 1) compared to what would be expected within the range of natural variation. There are substantial areas of hardwood forest in the project area, particularly in Stamford and Readsboro, with scattered to abundant softwood regeneration. This situation likely arose due to land use history in the area, particularly selective removal of spruce trees from many areas in the late 19<sup>th</sup> century. Northern hardwoods respond more vigorously to large-scale clearing and land abandonment on most sites on the GMNF compared to softwoods, and so this series of events led to the abundant, mature hardwood stands we see today. The project area has numerous scattered swamps and wet meadows that continue to provide habitat for softwoods, which supply the relatively abundant seed source for the softwood regeneration we find under the hardwood canopies in the area. Red spruce is adapted to surviving under shade and responding to small openings, and so with an abundant seed source and cool, moist soil conditions it can become established under hardwood canopies.

Correcting the compositional imbalance identified in Table 1 requires releasing patches of small softwood trees from the hardwood canopy that overtops them. As long as the openings are relatively small, such as those created using group selection techniques, the softwoods can respond to the increased sunlight and advance further up into the canopy. Enhancement of softwood seedlings, saplings, and small poles in areas with tendencies toward softwoods will increase habitat diversity in the project area and will help to restore a more ecologically appropriate forest composition.

Within the South of Route 9 Project Area there is an opportunity to:

- Release understory softwoods in areas where ecological site conditions suggest a tendency toward mixedwood or softwood composition, particularly where hardwoods are dominant, using a combination of group selection harvesting and improvement cuts.

### **Aspen Habitat**

Aspen habitats are short-lived and their continuing presence on the landscape is dependent on natural disturbances or vegetation management activities of large enough size to prevent succession to longer-lived species like northern hardwood or mixedwood types. The South of Route 9 HMU composition objectives identify a long-term goal of having 2-3% of the project area composition in aspen-birch habitat (Table 1).

Aspen can occur in both pure stands, as well as scattered small clones within stands of other habitat types. There are currently no known stands of aspen or birch of at least an acre in size anywhere on NFS lands within the project area, although there are small groups of aspen trees embedded within other habitat types widely scattered within the project area. Aspen clones in other habitats can be managed over time to create new stands of aspen. If mature aspen clones are not managed, the clones can become less productive and die, removing this habitat feature from the landscape. Allowing these clones to decline also removes the potential to convert them to pure aspen stands. Providing age and structural diversity of aspen clones and stands can increase available wildlife habitat within the project area. However, there are not very many stands with enough of an aspen component to be able to create whole stands of aspen over the short-term. Management can increase the abundance of aspen within stands, and over time this can lead to more substantial patches of aspen forest in the project area. If the Forest Service was able to create 120 acres of suitable habitat for aspen regeneration every 10 years over the next 40 years; this would enable us to make substantial progress in meeting

our aspen composition and age class objectives in 60-80 years, assuming continued regeneration harvesting every 10 years.

Within the South of Route 9 Project Area there is an opportunity to:

- Create new early-successional aspen habitat in stands suitable for timber management within the project area for wildlife species that require a mix of these unique habitats, through the use of clearcutting.
- Improve aspen clone diversity in stands suitable for timber management within the project area, expanding some clones into full aspen stands where ecological landtypes and field data suggest potential for a strong regeneration response.

### **Oak Habitat**

A substantial amount of mature oak and oak-northern hardwood habitat exists in the Broad Brook/Dome area of the project in Pownal, with a strong understory of beech and red maple in places. These stands are predominantly in Compartment 169 (stands 26, 32-38). Some of this habitat may remain oak-dominated for the foreseeable future due to stressful conditions such as very shallow and acidic soils (e.g. portions of stands 26 and 36). Much of this habitat, however, has abundant beech and red maple in the understory and few oak saplings. There is a well-documented process, known as “mesophication”, associated with oak forests that are transitioning to hardwood-dominated forests. Much of the scientific evidence suggests that the removal of fire as a disturbance regime in the early 20<sup>th</sup> century has led to forests accumulating organic matter and creating more shade, which benefit species associated with more moist or “mesic” site conditions, like maple and beech. Seedlings of these species compete more effectively than oak in shady and moist understories. Thus many forests formerly dominated by oaks are transitioning to dominance by other hardwoods when there is no management intervention to alter this trajectory.

Evidence for mesophication at the Dome is strong in much of the area currently dominated by oak and oak/northern hardwoods and having deeper soils, generally below 1,400 feet elevation. Evidence for mesophication is more equivocal along the ridgeline and slopes above 1,400 feet (see below). Even with potential warming from climate change, it is unclear if the Dome will ultimately be able to sustain oak forests without human intervention. In glaciated areas that tend to be acidic and have low fertility like the Dome, beech and red maple are replacing oak. The loss of oak-dominated and oak-associated natural communities from the landscape would mean an important loss of habitat and structural diversity; the maintenance and improvement of which is a Forest Plan objective.

The south and west-facing middle slopes of the Dome and the ridgeline, generally between 1,400 and 2,200 feet in elevation, are dominated by a variety of uncommon natural communities, including dry oak forest and woodland, red pine forest and woodland, and three heath openings dominated by huckleberries. Collectively these communities are considered part of the Central Appalachian Pine-Oak Rocky Woodland and Central Appalachian Dry Oak-Pine Forest ecological systems. These oak and pine forests are unique in Vermont for having American chestnut (*Castanea dentata*) and sassafras (*Sassafras albidum*) in them, species at the northern extent of their ranges in Pownal. As such, they are recognized by the State of Vermont Natural Heritage Inventory as significant natural communities. These types of natural communities are also fire-adapted, as evidenced by the widespread occurrence of black huckleberry (*Gaylussacia baccata*), red pine (*Pinus resinosa*), and fire-tolerant oaks like white and chestnut oaks (*Quercus alba* and *prinus*); and they are usually sustainable so long as fire disturbance periodically occurs to reduce the build-up of organic matter and kill other encroaching hardwood trees. There is anecdotal evidence from the diary of Grace Greylock Niles ([Bog-Trotting for Orchids](#), published in 1904 and documenting her wanderings and

musings during the late 1800s), of annual burning by settlers of nearby Mason Hill (which she named Mount Ceta) and the Domelet for berries (huckleberries and blueberries). She describes large areas of huckleberries, as well as indications of lightning fires burning forested areas. The dry oak habitats at the Dome are replicated to the west on the Domelet and Mason Hill in places, suggesting similar origins through fire disturbance, although the heath openings appear to be unique to the Dome at the present time.

There has been no fire documented from the Dome area since that time, and charcoal evidence is limited to small fire rings established by visitors. Fire suppression in Vermont became an important policy after many damaging slash fires occurred in the first decade of the 20<sup>th</sup> century. Scattered throughout the mid-elevation parts of the Dome are small patches of paper birch, red maple, and beech saplings and pole-size trees, suggesting that even here there is some mesophication happening. It may take much longer for these forests to transition away from oak, and it is possible that they will always maintain an oak component given the relatively infertile site conditions. Once these beech, birch, and maple trees are of a size to create shade and abundant leaf litter, soil and microclimate will become more moist, enhancing conditions for establishment of seedlings of these species. While this oak-pine-heath landscape appears generally stable along these slopes, without recurring fire the landscape will slowly but inevitably become more hospitable to closed-canopy forest and the landscape will lose structural diversity. With acorns representing one of the most valuable and energy-rich plant foods available to wildlife of Eastern forests, the loss of oak forests will also have considerable impacts on wildlife species.

It is likely that a combination of factors, including human use and natural occurrence of fire in the area, site conditions such as shallow dry soils and high levels of sunlight and exposure, and close proximity to an apparent “tension zone” in New England representing the transition between oak forests of southern New England and northern hardwood/spruce forests of northern New England, all contributed to development of the diversity of oak forest habitats we see at the Dome today. It is clear that mesophication is occurring at the Dome, over extensive areas of the lower slopes, and in small patches on the dry and infertile middle slopes. There is no well-established oak regeneration in the oak-hardwood forests of the lower slopes, and it’s clear that without human intervention these forests will contain limited numbers of oak in the next forest generation. While the oak-pine-heath part of the Dome landscape appears generally stable along the middle slopes, without recurring fire the small mesic patches will continue to expand and coalesce, with the landscape slowly becoming more hospitable to forest vegetation typical of infertile sites like beech and red maple, and so losing its fine-scale and structural diversity. There will come a time when beech and red maple have expanded to a point where the use of prescribed fire would be ineffective at maintaining the oak-pine-heath woodland/forest mosaic character of these slopes. For example, just south of the project area in Massachusetts on Pine Cobble, an intense natural wildfire in the early 1980s facilitated the transition of the area to beech composition because beech was already well-established in the understory. With beech and red maple limited to small patches along these middle slopes and ridgeline, we infer that the intentional use of fire could be designed to maintain and enhance this mosaic of natural communities with limited risk of loss of the target communities.

The loss of fire as an important form of disturbance in oak and pine forests has led to its reintroduction as a management tool in various parts of the country, including the eastern U.S. Prescribed fire—also called prescribed or controlled burning—refers to the intentional ignition of carefully managed fires for the purpose of achieving a specific management objective. In the East, prescribed fire has been demonstrated as an effective tool for managing for oak regeneration and reducing competition. Fire has also successfully been used in conjunction with shelterwood harvests to create suitable light conditions for oak seedling germination, and

then approximately every four years to reduce red maple and beech competition. Fire can also be used to maintain oak woodland and mosaic forest structures through burning at times and in ways similar to those used by settlers and Native Americans. The use of this type of prescribed fire in these types of communities (e.g. Appalachian Oak-Pine-Rocky Ridge Forest) has been implemented successfully in other parts of the New England/NY region, including at New Boston Air Force Station in New Hampshire, and in the Shawangunks in NY. In the Northeast, however, the use of fire is constrained by a number of challenges, including narrow burn windows (10-15 days in early Spring), the inability to use fire during the hot part of the summer due to humid conditions, protection of bat roosting trees, and potential damage to valuable overstory oak trees. This tends to limit the use of fire as a silvicultural and ecological management tool to those areas that can more effectively carry fire during the dormant and early spring season (drier sites), and where damage to canopy trees is mitigated either by their thick bark or through keeping fire intensity low near the boles of desired canopy trees. In areas of dense beech sapling layers under full oak canopies, created due to the removal of fire disturbance over several decades in combination with beech bark disease, fire may not be the most effective way to reduce beech competition because burning hot enough to kill all the beech will also damage overstory trees that have not experienced recent fires, and may not inhibit a sprouting response from beech (e.g. Pine Cobble).

Mechanical treatments to encourage oak regeneration and discourage beech have also been successful in some situations. Where they have been most successful have been in association with small patch cuts of 1-2 acres in size within stands that have an oak component, where several of the overstory oak trees are reserved for seed crops, with harvesting completed in the late fall before snowfall, and including ground scarification by driving the machinery over the patch cut, crushing existing beech and maple regeneration. This type of treatment would be limited to those areas whose soil can support summer and fall logging.

The use of herbicide (glyphosate in various formulations) applied to cut surfaces of beech (stumps or stem incisions) has also been shown to be an effective method of reducing beech competition so that oak regeneration can thrive, particularly in areas where the use of fire and/or mechanical treatments have been tried unsuccessfully. This use has been demonstrated successfully on the Monongahela National Forest in West Virginia. Because beech trees affected by beech bark disease (BBD) are responding to the disease by producing root sprouts or “suckers”, many of these root suckers will survive once the parent tree has succumbed to the disease complex. While the tree is still living, though, it and its root suckers share one large root system. When herbicide is applied to a cut surface of a beech tree with root suckers, the tree will suck the herbicide into the root system, spreading it to the root suckers. Using herbicide on the cut surfaces essentially kills both the beech tree that is affected by BBD, as well as its suckers which are genetically identical and so will also eventually be affected by BBD. Herbicide may be applied during the growing season or during the late fall and early winter, and must be applied within 4 days of harvest. This tool can therefore be applied to both summer and winter harvests. The use of herbicide as a component of silvicultural treatments that create openings in the canopy and reduce beech competition can facilitate establishment of oak regeneration, which then can be enhanced by the use of fire.

Within the South of Route 9 Project Area there is an opportunity to:

- Increase the abundance of oak in stands that have an oak component by releasing them from competing vegetation.
- Regenerate oak and oak-hardwood stands to create new stands of oak.
- Maintain the health and integrity of dry oak-pine-heath forest and woodland natural communities, and the wildlife and plant habitats they provide, by restoring fire as an ecological process.

## **Permanent Upland Openings**

Early-successional habitat represents an extremely important component of wildlife habitat on the GMNF. Early-successional habitats include a range of vegetation conditions from grass-forb meadows to openings with young, shrub-scrub, woody vegetation. On the GMNF, early-successional habitat is provided by permanent upland openings, as well as by temporary or silvicultural openings (see the Regenerating/Early-Successional Habitat section, p. 9). Conditions in temporary openings change over time as trees mature; early-successional benefits for wildlife are essentially gone within about twenty years. By contrast, permanent upland openings are maintained in early-successional habitat conditions through regular mowing, other mechanical treatment, or prescription fire. The desired future conditions for the Diverse Forest Use MA (Forest Plan, pp. 47 and 48) and the Diverse Backcountry MA (Forest Plan, pp. 58 and 59) include providing permanent upland opening habitats in shapes and sizes that are consistent with visual objectives.

Currently around one percent of NFS lands within the project area are in the permanent upland opening habitat type, which is below the minimum objective of 2-3% set by the HMU analysis (Table 1). There are currently 30 upland openings in the project area, totaling about 150 acres. Half of these openings (15) are maintained powerline corridors. The powerline corridors are managed by power companies that either have outstanding rights-of-way or special use permits for these corridors. While providing functional early-successional habitat, their long, linear, and narrow shape creates limitations on their value as wildlife habitat. The other openings are primarily log landings from previous timber sales that are small (less than 1 or 2 acres), and are being lost as forest succession encroaches upon them. Scientific literature indicates that these small openings do not provide ecologically-functional, early-successional habitat for most wildlife species. All but one of these small stands are too small or difficult to maintain, and will be merged into and managed as part of the surrounding timber stand.

As described previously in the “Regenerating/Early-Successional Habitat” section, there are no stands of early-successional habitat (stands in the regenerating or 0-9-year-old age class) that are at least an acre in size (Table 2). Early-successional habitat can be created through timber harvest and maintained as permanent upland openings by mowing, hand-cutting, and/or prescribed fire applied on an annual to five-year schedule. Permanent upland openings maintained on a more regular basis can provide grass-forb or meadow-like habitats, whereas openings maintained on a longer “rotation” typically develop scrub-shrub vegetation. Permanent upland openings also provide sites for dispersed camping, nature viewing, and berry picking.

Within the South of Route 9 Project Area there is an opportunity to:

- Create new permanent openings in the project area to provide additional and more permanent early-successional habitat to meet forest habitat composition objectives.

## **Extended Rotations**

Management direction for the Diverse Backcountry MA includes a guideline requiring the use of extended rotation ages for stands managed using even-aged silvicultural systems (Forest Plan, p. 59). Extended rotation ages range from 150 to 300 years depending on forest type (Forest Plan, p. 12, Table 2.2-3). In order for trees to reach these ages and remain healthy and productive, thinnings are typically employed periodically during the rotation to allow healthy trees to continue growing with reduced competition. Currently 82 percent (13,505 acres) of the Diverse Backcountry MA is considered suitable for harvesting, and of that 94 percent (12,691 acres) is either mature or old (mostly mature). Many of these stands have not had recent harvests and have low levels of productivity. Others were selectively harvested for short-term



economic value prior to Forest Service ownership, leaving poorer quality and less productive trees. Trees that are still healthy can be thinned and will respond to the thinning by growing larger and expanding the space they occupy; stands with many unhealthy trees may not remain productive at the extended rotation age even with thinning, and may continue to stagnate and die before reaching rotation age. Consequently, there is a need to enhance the longevity of mature and old stands within the Diverse Backcountry MA.

Within the South of Route 9 Project Area there is an opportunity to:

- Increase the growing space and overall tree health within stands in the Diverse Backcountry MA in order to sustain their productivity over the rotation through the use of thinning.
- Identify stands within the Diverse Backcountry MA that will not remain productive through the extended rotation and regenerate them or convert them to uneven-aged stands.

### **Deer Wintering Areas**

Management direction for wildlife on the GMNF includes a Forest-wide emphasis to maintain and enhance wintering habitat for white-tailed deer (*Odocoileus virginianus*) by retaining and encouraging vegetative conditions for both shelter and browse (Forest Plan, pp. 29 and 30). Wintering habitat for deer will be emphasized within, or adjacent to, identified Deer Wintering Areas (DWAs), and permanent upland wildlife openings containing grasses, forbs, and shrub growth should be provided adjacent to DWAs to provide forage in early spring. The Diverse Forest Use MA (Forest Plan, pp. 47-48) and Diverse Backcountry MA (Forest Plan, pp. 58-59) each acknowledge the importance of a mix of habitats for wildlife species, including white-tailed deer.

There are about 20 state-mapped DWAs within or adjacent to the project area (refer to Map 1), primarily in the Hoosic and Walloomsac watersheds south of Bennington, Vermont. Two small DWAs are located on NFS lands near Woodford and Readsboro, Vermont; the others are located on non-NFS lands. State-mapped DWAs are areas of predominantly softwood vegetation that provide winter cover of desirable quality. During inventory, stand examiners noted stands with softwood vegetation that provides thermal cover for deer and other wildlife. Although not specifically mapped as deer wintering areas, these stands of softwood cover would be retained. In addition, silvicultural treatments in other stands can be designed to increase the softwood component of stand vegetation, which would increase the availability of winter cover in the future.

A second component of winter survival for white-tailed deer is creation of hardwood regeneration that provides browse (food) for the deer. Increasing the availability of winter browse is the most immediate action that can enhance winter survival of white-tailed deer within and adjacent to the project area.

Within the South of Route 9 Project Area there is an opportunity to:

- Enhance availability and quality of browse adjacent to DWA cover areas to improve overall DWA conditions.
- Enhance the overall abundance and availability of hardwood browse available for deer across the project area.

### **Apple Tree Management**

Forest-wide management direction for wildlife includes retaining and releasing apple trees whenever and wherever possible (Forest Plan, pp. 27 and 29). Individual apple trees and remnant orchards are an important source of wildlife food and are historical features of the GMNF. As the forest matures, other tree species encroach upon and shade apple trees, which

become less productive in the reduced light of the understory and eventually die. Removal of over-topping trees immediately around the apples invigorates their growth and promotes fruit production. Occasional pruning of these apple trees helps redirect production from vegetative growth to production of fruit.

Apple trees are located at numerous sites in the project area. Typically these are single trees or groups of three or four surviving trees that are remnant from historical home sites. Although our current knowledge suggests that the abundance and distribution of apple trees is considerably lower within this project area than in other parts of the GMNF, it is anticipated that more apple trees would be discovered during additional inventory, planning, and project implementation.

Within the South of Route 9 Project Area there is an opportunity to:

- Release apple trees so that these historical features continue to provide food for wildlife.
- Prune apple trees to enhance soft mast production, providing an increased food source important to many wildlife species.
- Pile material cut to release and prune apple trees to enhance habitat for small mammals, reptiles, and amphibians.

### **Down Woody Debris Habitat**

Across the project area there are historic sites including rock walls, building foundations, and wells. These sites are often located in small- or medium-size openings and they may include other habitat features such as small ponds, wetlands, or apple trees. The features themselves (such as rock walls, wells, and foundations) provide unique wildlife habitat providing nesting shelter or travel ways for small mammals, reptiles, and amphibians.

The Heritage Section discusses the need to provide stewardship for historic sites throughout the project area that are within or near proposed vegetation management activities. Trees and shrubs cut to maintain structures associated with these sites can be retained in brush piles that provide nesting, foraging, and travel habitat for small mammals, reptiles, and amphibians.

Within the South of Route 9 Project Area there is an opportunity to:

- Maintain historic structures and improve the wildlife habitats they provide.
- Creatively place removed material in such a way as to provide nesting, foraging, and travel habitat for small mammals, reptiles, and amphibians.

### **Areas of Special Significance**

Areas of special significance are those areas with rare or outstanding biological, ecological, or geological features. Some of these areas are identified in the Forest Plan as special management areas (e.g. Research Natural Areas, Ecological Special Areas), while others are simply tracked by the State of Vermont and/or the FS and protected or managed as needed. New areas of significance are identified from time to time with additional inventory efforts, such as the areas of dry oak-heath habitat associated with The Dome in the project area for the South of Route 9 IRP. In addition to the Dome, there are a number of wetlands recognized by the State of Vermont as significant natural communities and representing four wetland types:

- Dwarf shrub bogs (Stamford Meadows, Stamford Pond)
- Pocket red spruce-cinnamon fern swamps (Stamford Meadows Pocket Swamps)
- A large emergent wetland complex (Stamford Stream Wetland Complex)
- Poor/Medium fens (Thendara Camp Fen, Stamford Stream Wetland Complex)

Thendara Camp Fen is being directly impacted by unauthorized motorized use from FT 391 that passes through the fen along its eastern edge. This is an uncommon, high quality natural area

and supports rare and uncommon plants. Additional unauthorized trails access Stamford Meadows from a variety of directions. In addition, forest management opportunities occur in close proximity to the Stamford Meadow Pocket Swamps.

Within the South of Route 9 Project Area there is an opportunity to:

- Protect Thendara Camp Fen and improve its ecological integrity and ensure that the hydrology and water quality needed to support this natural community and its associated species will be restored and maintained.
- Protect the hydrology of the meadows.
- Ensure that wetland buffers are used around the Stamford Meadows Pocket Swamps to protect them from damage.

### **Wildlife Habitat Improvement on Non-NFS Lands**

Many wildlife species occur across large home ranges that span NFS and non-NFS lands. Non-NFS lands adjacent to the GMNF include habitats that provide food and shelter for many of these species. The project area also includes known wildlife travel corridors that connect large areas of habitat. In many cases, these travel corridors transect non-NFS lands, connecting large tracts of habitat located on the GMNF. Some of these wildlife corridors intersect State highways and other roads. At this time, the South of Route 9 Project does not include any specific actions for habitat improvement on non-NFS Lands. During the life of the project, however, opportunities for collaborative work with partners likely will arise.

Within the South of Route 9 Project Area there is an opportunity to:

- Partner and collaborate with private land owners within the project area to identify potential improvements to existing wildlife habitat conditions.
- Partner and collaborate with the Vermont Agency of Transportation and Vermont Agency of Natural Resources to enhance habitat conditions along wildlife travel corridors.
- Maintain and increase key habitat features throughout the home ranges of wildlife species that occur on NFS and non-NFS lands.

## **2. Timber**

### **Enhance Forest Health and Diversity; and Promote High Quality Timber Production**

Quality habitats through diverse forest composition and age classes are important Forest Plan objectives (Forest Plan, pp. 10 and 11). Timber harvesting is the primary tool to achieve or work toward these objectives (Forest Plan Objective under Goal #10, p. 15). Silvicultural practices can be used to meet wildlife and ecological objectives in the Diverse Forest Use MA (Forest Plan, p. 47) and the Diverse Backcountry MA (Forest Plan, pp. 58-59) providing a mix of habitats for wildlife species. Providing high-quality sawtimber and other timber products on a sustained yield basis is also an important management objective of the Forest Plan, and a major vegetative management emphasis of the Diverse Forest Use MA (Forest Plan, pp. 14 and 47).

FS inventories have shown that a number of timber stands in the South of Route 9 project area are overstocked with trees. Some stands have trees with poor form, declining vigor, insect, disease or physical damage from the elements to a degree that would designate them as low quality stands. Some stands are now mature or over mature; and desired tree size, age and quality have been achieved, or growth levels have dropped off. These stands are now ready to be harvested before sawlog quality is reduced, or the trees decline in economic value and die.

Without any vegetation management, the forest habitat composition and age class distribution within the project area would not contribute towards achieving the Forest-wide objectives

specified by the Forest Plan. In addition, stands would continue to decline in health and timber quality would decrease.

Within the South of Route 9 Project Area there is an opportunity to:

- Implement both even-aged and uneven-aged silviculture practices to meet habitat composition and age class objectives.
- Create a mix of deciduous and coniferous forest stands of various types in stands that vary in size, shape, age, height, and tree species composition.
- Improve size and quality of sawtimber by reducing stand density, improving spacing and retention of more desirable species.
- Improve sawlog production and wood quality by removing trees in low quality stands afflicted with insect, disease and other damage to prevent the spread of the damaging agent or to remove a species that may be a vector for insect spread.
- Capture sawlog quality in mature and over mature trees before it is reduced or the trees decline in value.
- Improve pulpwood and fuelwood production that can be used as a local alternative to fossil fuels.
- Improve forest and stand health and diversity by:
  - Regenerating poorly stocked, low quality, mature stands, and stands that are declining in productivity to grow new stands and sustain forest cover and timber production for the long-term.
  - Promoting an increase in oak habitat by releasing oak from competing hardwoods.
  - Promoting an increase in softwood and mixedwood habitats by releasing spruce/fir and hemlock from competing hardwoods.
  - Promoting an increase in aspen/paper birch habitat by creating openings in areas with a presence and propensity to growing aspen/birch.
  - Increasing the diversity of wildlife habitat that relies on open and early successional habitat by creating temporary and permanent openings.

### **Provide Forest Products**

Forest Plan Goal #8 is to “[p]rovide a sustainable supply of forest products” while an associated objective is to “provide high-quality saw timber and other wood products for local economies” (Forest Plan, p. 14). Forest Plan Goal #17 is to “[s]upport regional and local economies through resource use, production, and protection” (Forest Plan, p. 17). Timber sales resulting from vegetation management can be offered to public bidders through Standard Timber Sale and/or Stewardship contracts to help support local and regional economies.

The availability of timber sales from NFS lands is an important component to the local and regional wood product based economies in Vermont. Without timber sales generated from vegetation management activities within the South of Route 9 project area, the opportunity to benefit these economies would be lost.

Within the South of Route 9 Project Area there is an opportunity to:

- Provide a number of different sized timber sales which would support local and regional economies.
- Provide a number of post-harvest service contracts such as site preparation and tree planting to help establish reforestation while supporting the local and regional economy.

### **3. Non-Native Invasive Plants**

#### **Control Existing Populations of Non-Native Invasive Plants (NNIP)**

Forest Plan Goal #2 is to “[m]aintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals” (Forest Plan, p. 10). An associated objective is to “[m]inimize adverse effects of NNI[P] on National Forest resources by undertaking activities such as prevention, inventory, containment, and abatement (p. 13).

Inventory to this date indicates that infestations of NNIP are fairly widespread in the South of Route 9 project area. In addition to their potential effect on rare plants, these NNIP may be competing with tree regeneration or degenerating wildlife habitat. They may also affect the recreational value of the area; for example, high concentrations of Japanese barberry are documented elsewhere to correlate with increased abundance of deer ticks and Lyme disease. Many forested stands, openings, roads, trails, and river corridors have not had inventory, and it is likely that there are many more infestations than are currently documented.

Within the South of Route 9 Project Area there is an opportunity to:

- Collaborate and establish partnerships with private land owners, organizations, Towns, and State agencies to identify and control existing and future populations of NNIP on non-NFS lands that complement NNIP treatment activities on NFS lands.
- Minimize the spread and impacts of NNIP through proposed treatments.

### **4. Botany**

Forest Plan Goal #2 is to “[m]aintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals” (Forest Plan, p. 10). One objective toward achieving this goal is to “maintain or enhance habitat conditions for Regional Forester Sensitive Species through the development of specific site prescriptions during project development” (Forest Plan, p. 12).

While the South of Route 9 project area, especially at the Dome, is rich in the number of rare plant species, many of those species aren’t thriving. In some cases, monitoring suggests a decline in number of rare plants in a population. In other cases, population numbers may be relatively stable, but many plants aren’t flowering and fruiting, suggesting a potential for loss of viability over time. In many locations, non-native invasive plants have infested rare plant population sites. In addition, lack of active forest management (e.g. prescribed fire, thinning, or the creation of small canopy gaps) may have resulted in changes in habitat suitability over time, followed by threats to rare plant population viability.

Within the South of Route 9 Project Area there is an opportunity to:

- Improve habitat conditions for rare plant species.

### **5. Fisheries and Water**

Forest Plan Goal #4 is to “[m]aintain or restore aquatic, fisheries, riparian, and wetland habitats” (Forest Plan, p. 13). Also, Forest Plan Goal # 6 is to “[m]aintain and restore ecological processes and systems on the GMNF within a desired range of variability, including a variety of native vegetation and stream channel types, and their patterns and structural components” (Forest Plan, p.14). Principles of stream geomorphology and habitat management are used to restore and enhance fisheries habitat (Forest Plan, p. 13) while knowledge of riparian/floodplain

functions and large woody debris (LWD) dynamics are used to restore and enhance stream ecosystem processes (Forest Plan, p. 14).

### **Improve Fish Habitat and Water Quality**

Surveys were conducted in two streams within the project area, Broad Brook and Stamford Brook, to evaluate habitat conditions representative of GMNF headwater streams. Table 3 compares the natural, or desired, LWD quantities and pool habitat with the existing conditions for these two streams as representative of the project area.

The amount of pool habitat in forested headwater streams is closely tied to the quantity of LWD found in the streams. Large trees that fall into streams create deep pools with hiding cover for aquatic biota. Low percentages of pool habitat are indicative of low quantities of LWD.

Stream habitat in headwater streams in the GMNF watersheds typically lack the quantities of instream LWD that would naturally be found in upland streams. Large wood in streams is critical to creating diverse stream habitats for fish, amphibians, and aquatic insects. It is also important for maintaining streambank and channel stability.

<b>Table 3: Comparison of existing LWD and pool habitat with Forest Plan objectives.</b>		
<b>Stream</b>	<b># LWD/Mile</b>	<b>Percent Pool Area (%)</b>
<b>Forest Plan Objective<sup>1</sup></b>	<b>175-230</b>	<b>33</b>
Broad Brook	20	9
Stamford Brook	22	2
1. 2006 Forest Plan objectives establish the desired future condition for fish habitat.		

In addition to the deficiencies in existing LWD in project area brooks, several stream culverts along existing roads in the project area are migration barriers to native brook trout and other aquatic species. The streams currently impacted on NFS roads are:

1. Forest Road 264 at approximate mile post 0.30 crossing an un-named tributary to Roaring Brook.
2. Forest Road 73 at approximate Mile post 1.55 crossing an un-named tributary to the West Branch of the Deerfield River.
3. Forest Road 273 approximately 0.19 miles south of the Old Stage Road crossing an un-named tributary of Stamford Stream.

Without increasing the amount of LWD and aquatic organism passage improvements, aquatic habitat diversity and connectivity will remain below desirable levels and may decrease over time.

Within the South of Route 9 Project Area there is an opportunity to:

- Increase the amount of LWD and pool habitat within the headwaters of the following subwatersheds within the project area: Roaring Branch, Broad Brook and Roaring Brook.
- Improve fish passage at road-stream crossings where culverts have created migration barriers.

### **Improve Fish Habitat Quality on Non-NFS Lands**

Stream habitat in streams crossing private lands within the project area are likely affected by low quantities of LWD similar to streams on NFS lands resulting in reduced habitat diversity, stability and sediment storage.

Through a cooperative partnership with Trout Unlimited, Hoosic River Watershed Association, Regional Planning Commissions and Vermont Fish & Wildlife Department, all known stream crossings within the project area have been surveyed and evaluated. Many culverts along roads under town, state or private jurisdiction are blocking aquatic organism passage and/or reducing flood resiliency.

Within the South of Route 9 Project Area there is an opportunity to:

- Collaborate and establish partnerships with private landowners, organizations, towns, and state agencies to identify streams with poor aquatic habitat quality on non-NFS lands within the project area.
- Improve fish habitat in streams on non-NFS lands within the project area.

## **6. Soil and Wetlands**

Forest Plan Goal 3 is to “Maintain or restore the natural, ecological functions of the soil,” with objectives to “Minimize the adverse impacts on soils from management activities,” and “Restore soil processes and functions on degraded soils.” Forest Plan Goal 4 is to “Maintain or restore aquatic, fisheries, riparian, and wetland habitats” (p. 13). Soil, wetland, and water resource inventories were conducted to identify areas where these Forest Plan objectives are not fully met due to existing or potential risks of erosion, soil compaction, stream sedimentation, or impacts to wetland functions.

Soils were inventoried and characterized by the Natural Resource Conservation Service (NRCS). This information is available online at the NRCS Web Soil Survey, and it was used to identify soils in the project area. To supplement this information, specific areas of interest in the project area (such as specific stands proposed for timber or wildlife habitat improvement activities) will be visited to determine areas of shallow soils on a smaller scale.

Approximately 1,522 acres of potential and mapped wetlands have been identified through data sources including the National Wetlands Inventory, Vermont Significant Wetlands and FS stand data on USFS lands within the Project Boundary. There are approximately 613 acres of emergent and shrub wetlands, and 909 acres of forested wetlands, 611 acres of the project area wetlands have recently been inventoried and field verified by USFS staff or cooperators. Wetlands in the project area tend to be concentrated in the northern portion of the area in association with the headwaters and tributaries of the West Branch of the Deerfield River, Stamford Stream, and Roaring Brook.

The Desired Future Condition of the soil resource is similar to the Goals and Objectives stated previously. Gaps between the Desired Future Condition and Existing Condition exist due to the effects of acid deposition and erosion of old roads, trails, and/or skid roads. There is ongoing erosion on several old logging and skid roads and trails throughout the project area that were constructed prior to Forest Service ownership. Many of these roads are being used illegally by four-wheel-drive (4WD) vehicle and off-highway vehicle (OHV) use. The soil is degrading due to loss of topsoil and compaction. Impacts are likely to increase in magnitude and extent if OHV use continues. We recognize that these goals and objectives cannot be achieved on all of the project area acreage, 100% of the time. Existing roads, hiking trails, homes, agricultural practices, and many other land uses have all detrimentally impacted soils. This is true today, as

it was in the 1800s and 1900s when lands were harvested multiple times and maintained for sheep grazing.

Inventories identified ongoing soil and wetland resource degradation at the following locations (refer to Map 3):

- Forest Trail (FT) 391: Trail erosion and lack of proper drainage structures are common problems along FT 391 (a snowmobile trail). The area along Thendara Camp Fen shows signs of unauthorized ATV use and creating a risk of sedimentation entering the fen. Thendara Camp Fen is an Ecological Special Area and the importance of the area is described in the Habitat Diversity Section (p. 16).
- Sucker Pond Trail: The road is currently used for off-roading, and the entire road shows evidence of severe erosion, rutting, compaction, and muddy/ wet sections, and the road has been widened in many places through attempts to get around the already degraded sections. Stamford Meadows (old skid roads): Roads are open to 4WD truck use. There is also some ongoing erosion creating a risk of sediment entering the stream due to unauthorized ATV use
- The Dome Trail (proposed hiking trail): There is existing erosion and gullying on the trail.
- Dutch Hill (old ski area work roads and ski trails): ATVs have caused excessive rutting and erosion. Old Stage Trail: The old road bed drains poorly in many areas and is eroded creating a risk of sediment entering streams and wetlands.
- Stamford Meadows Southeast ("loop road"): Most of the road is rutted or eroded on the southern, eastern, and northern segments of this "loop road." At the northeast corner, there is severe erosion and rutting due to illegal 4x4 and ATV activity, threatening sediment delivery into and degradation of nearby wetlands. There is also a stream with a bridge that is severely damaged. The western segment lacks adequate road drainage structures.
- FT 394, Stamford Pond Trail (Snowmobile trail): Approximately 40% of the road is rutted or highly eroded threatening sediment delivery into and degradation of nearby streams and wetlands
- To the west of Risky Ranch Road, an unauthorized ATV trail starts on private land and winds its way onto NF land. There is existing erosion, rutting, compaction, and muddy/ wet sections caused by the unauthorized use.
- Heartwellville Access Road: Trash dumping and 4WD vehicle use are degrading a wetland and its protective strip. Roaring Brook Road (FR 264): Sections of road are heavily washed out from Tropical Storm Irene, where Roaring Branch overtopped the banks. This erosion is threatening sediment delivery into and degradation of the stream.

Within the South of Route 9 Project Area there is an opportunity to:

- Reduce soil, water and wetland resource degradation resulting from illegal trail or road recreation uses, poor trail design and locations, and/or unneeded roads at the identified locations.

## **7. Recreation**

Forest Plan Goal #12 is to "[p]rovide a diverse range of high quality, sustainable recreation opportunities that complement those provided off National Forest System lands" (Forest Plan, p. 15). The 2006 Forest Plan also provides for a diversity of trail uses within the Forest's settings including motorized uses, hiking, biking, cross-country skiing, snowshoeing, horseback riding, and dog sledding. (Forest Plan Record Of Decision (ROD), p. 19).



During the development of the 2006 Forest Plan “we received a substantial number of comments on the use of summer [Off-Road Vehicles] ORVs on the GMNF” (Forest Plan ROD, p. 19). The ORV issue was addressed through collaborative discussions and careful consideration that lead to the development of Standard and Guidelines that allow for “consideration of future summer ORV trail development solely to those trails which would provide connecting links for trail systems largely located off National Forest System lands. No stand alone or self-contained summer ORV trails or trail systems would be developed on the Forest.”(Forest Plan ROD, p. 20)

Forest Plan direction specific to motorized trails for summer off road vehicle (ORV) use include the following important standards or guidelines (Forest Plan, p. 37):

- They shall be limited to connecting corridors that link sections of a larger state-wide, regional, subregional, or multi-town summer motorized trail system located off NFS lands;
- Trail termini or trailheads shall not be located on NFS lands;
- An entirely or predominantly contained summer ORV trail system shall not be located on NFS lands;
- They should be limited to the minimum distance needed to provide connectors for the trail system located off of NFS lands. Exceptions to this may be granted to provide opportunities to reduce impacts to other resources or enhance the recreational experience; and
- New summer ORV trail proposals should be supported by an organized partner group affiliated with a state-wide entity that is financially and technically capable and willing to assume primary responsibility for construction, operations, and maintenance.

Forest Plan Goal #14 is to “[p]rovide a safe, efficient, and effective Forest transportation system that meets both the needs of the Forest Service and the public” (Forest Plan, p.16). A Draft Travel Analysis was completed for the South of Route 9 project area which includes a narrative of the existing condition and needs of the trail system (Draft Travel Analysis for the South of Route 9 Integrated Resource Project, October 2014). The recommendations contained in the trails component portion of the Travel Analysis provide the basis for the trails management needs within the South of Route 9 project area.

The desired future condition for recreation opportunities varies across Management Areas (MA) in the South of Route 9 project area:

- The Diverse Forest Use MA will provide diverse recreational opportunities with pockets of semi-primitive motorized to the more common roaded natural recreation opportunity classes. Forest visitors will be common in developed recreation sites and camping areas along roads in the general forest area. Trail opportunities will be diverse, ranging from hiking and bicycling to snowmobiling and potentially summer off-road vehicle (ORV) riding. Summer ORV trails will be limited in scope as described in the Forest-wide Standards and Guidelines. Recreation management will be towards the desired Recreation Opportunity Spectrum (ROS) class of Roaded Natural (Forest Plan, p. 47).
- The Diverse Backcountry MA settings will be appropriate for a wide variety of recreational uses. Recreation facilities may be present and will complement the desired recreation opportunities. Trail systems will be present and new trails may be developed. Summer ORV trail will be limited in scope as described in the Forest-wide Standards and Guidelines. Recreation management will be towards the desired ROS class of Semi-primitive Motorized. (Forest Plan, p. 58).
- The Appalachian National Scenic Trail MA is to provide a variety of opportunities in the most primitive and natural setting and recognize the nationally significant aesthetic value

of these lands with a ROS of class towards semi-primitive non-motorized (Forest Plan, p. 67).

- Ecological Special Areas MA may have important recreation values in some areas in addition to their biological values for which they are designated. As a result, evidence of human activity will range from substantially unnoticeable to very evident, and road networks will vary from not evident to evident. Recreation management will be towards the desired ROS class of Semi-primitive Non-motorized (Forest Plan, p. 94).

In 2009-2010, the Vermont Trails Collaborative representing a consortium of trail user groups and public land managers focused on improving sustainable trail management across Vermont. A series of public meetings conducted in the fall/winter 2010 explored ways to help managers provide sustainable trail opportunities across landowner boundaries. In a report completed in 2012, the collaborative recommended actions to address situations where the existing supply of trail based recreation opportunities did not meet the public demand for experiences. Included in the report were demands for summer ATV use along the Old Stage Road (Trail) in Readsboro and Searsburg, and also near Sucker Pond in the Stamford area. During the development of possible project activities specific to the South of Route 9 IRP project area, the FS hosted multiple meetings with trail users including members of the Vermont Association of Snow Travelers (VAST), Vermont All-Terrain Vehicles Sportsman's Association (VASA), Green Mountain Club (GMC), Appalachian Trail Conservancy (ATC), Bennington Trail Cruisers, mountain bike club representatives, town representatives and individual trail users. These meetings indicated a desire to provide limited authorized summer ORV trail use on NFS lands to connect existing summer ORV trail systems that are authorized on multi-town roads and trails, and control illegal motorized trail use in areas where resource damage is occurring.

### **Provide Multiple Use Trail Opportunities**

The project area contains trails managed for primarily for hiking, and snowmobiling including 10.9 miles of the Appalachian Trail/Long Trail (AT/LT) with two shelters, 11.6 miles of Corridor 9 (FT 391), a primary snowmobile trail that is an important north-south connector in the VAST state-wide trail system, and the 5.9 mile Stamford Pond snowmobile trail, a secondary snowmobile trail that connects County Road with Corridor 9. Much of FT 391 is located on a route the Town of Woodford claims as a Class 4 Town Highway known as the Old Stage Trail and this trail is currently signed by the town as open to ATVs from FR 73 to Woodford Town Highway 2, Burgess Road. There are two trailheads in the project area, a trailhead on at the east end of FR 73 off of SR 100 in Heartwellville and a small parking area on County Road for the AT/LT.

There are 9 miles of Legal Trails in the project area under town jurisdiction as shown on the Vermont Agency of Transportation Town High Maps located in the Towns of Bennington, Pownal, Readsboro, Stamford and Woodford. These trails are open to multiple uses including snowmobiles and in some Towns ATVs, are not maintained by the towns in most cases, and usually provide connections between town roads through undeveloped areas. Although the Legal Trails that have town authorized ATV use under multi-town jurisdictions are self-contained systems, there is opportunity to connect these systems across NFS lands.

The project area also contains trails that are not classified as managed NFS Trails. Two recent large acquisitions, the former Stamford Meadows Wildlife Management area (4,472 acres) purchased by the FS in 2004 and 2006 and the former City of North Adams municipal watershed lands (3420 acres) purchased by the FS in 2006/2007 contain trails which have not been managed by the FS since their purchase. The Williams College Outing Club has maintained the trails on the former City of North Adams watershed lands and continue to do so through an agreement with the FS.

In the former Stamford Meadows lands the unmanaged trails include but are not limited to:

- The trail/road from the Stamford/Woodford town lines to County Road (4.3 miles) that has historically been multiple use including four wheel drive vehicles and ATVs, provides access to Lake Hancock (aka Sucker Pond), and connects with the FR 363, Burgess Road. The Town of Bennington has a ROW over the portion of this trail/road north of Lake Hancock which provides access to camps on Town of Bennington lands surrounding Lake Hancock. There is also ROW on the trail/road from Lake Hancock to County Road to provide access to a camp on the south end of Lake Hancock. This trail has been shown on the VAST trails maps and was used as a VAST trail at the time of the FS land acquisition. The trail is also shown on the VASA trail map as part of the VASA trail system in the area.
- The skid trails to Stamford Meadows some of which are inundated by beaver dams
- A snowmobile trail that connects the trail along Sucker Pond with FR 273. This trail has been shown on the VAST trails maps and was used as a VAST trail at the time of the FS land acquisition.
- Other unmanaged trails created by 4 wheel vehicles or as skid trails.

The former City of North Adams municipal watershed lands contains the Dome, Agawon and Broad Brook hiking trails located in Pownal, which are not NFS trails and are maintained by the Williams College Outing Club.

- The 2.5 mile long Dome Trail's western terminus is located on White Oaks Road and the eastern terminus is on the top of the Dome which is on private land.
- The Broad Brook Trail is approximately 3.4 miles long. The western terminus is located on White Oaks Road and traverses City of North Adams land for a short distance before it goes to NFS lands. The trail then follows Broad Brook with numerous crossings, and joins into Risky Ranch Road. This trail is a side trail to the Long Trail System.
- The Agawon Trail is .76 mile steep, rugged trail that connects the Dome and Broad Brook Trails.
- There are also numerous skid trails on this parcel of FS land left from City of North Adams management activities and unmanaged trails being used by 4 wheel drive vehicles.

The Hoosac Ridge area from Smith Drive and West Hill Drive to Dutch Hill in Readsboro contains unmanaged trails on NFS lands. A 3.5 mile trail runs north-south between Dutch Hill and Smith Drive and includes some Readsboro Legal Trails. This trail is used for snowmobiling, hiking, snowshoeing and cross country skiing. There is also an old skid road forming a loop trail off this trail that connects West Hill Drive and Smith Road and other trails that go west and south to Massachusetts. This loop trail is predominantly used for cross country skiing and hiking with some snowmobiling occurring on a portion of the loop.

Within the South of Route 9 Project Area there is an opportunity to:

- Improve recreation opportunities and sustain a safe, efficient, and effective transportation system by reconstructing and retaining high quality trails that are used by the public, and by connecting these trails with other trails in the area.
- Designate new trails in the project area for a mix of trail uses including summer ORV trails in the project area and expand partnerships to help maintain them.
- Work with VASA and the local VASA chapter, Bennington Trail Cruisers, to: connect and maintain existing ATV trails on town roads that connect multiple towns; to rehabilitate and manage existing trails for multiple use including summer ORV use; and to monitor and manage unauthorized ATV use on NFS lands.

- Protect resources by closing NFS trails and unmanaged trails that are causing damage to resources and working with organized trail partners.
- Clarify jurisdiction questions on roads and trails with the Towns of Woodford and Readsboro and consider other multiple use trail opportunities and partnerships.
- Improve access by creating, expanding, and improving trailheads.

### **Improve Backcountry Facilities**

The project area contains two AT/LT shelters: 1) Seth Warner Shelter, located south of County Road and 2) Congdon Shelter, located just south of the Old Stage Trail. Each shelter can accommodate 10 People At One Time (PAOT). The Seth Warner Shelter was constructed in 1965, is nearing the end of its life expectancy, and is easily accessed from County Road making it a popular party spot. The Congdon Shelter was constructed in 1967 and is also nearing the end of its life expectancy. These shelters are the first two shelters on the AT/LT in Vermont from its southern terminus at the Massachusetts State line and will both need to be replaced in the near future.

Within the South of Route 9 Project Area there is an opportunity to:

- Improve backcountry facilities and decrease deferred maintenance by consolidating shelter locations.

## **8. Scenery**

### **Enhance Viewing Opportunities along Existing Roads and Trails**

One of the top public activities on the GMNF is viewing scenery accessed by established vistas (Forest Plan EIS, pp. 3-211 and 3-306). Forest Plan Goal #15 is to “[m]aintain or enhance visual resources such as view sheds, vistas, overlooks, and special features” (Forest Plan, p. 16). Forest Service staff has identified opportunities to enhance viewing points along roads and trails including opportunities created by some past vegetation treatments. According to vista inventory data, the project area contains a few managed vistas along the AT/LT. Other vistas have been identified on or near the Dome Trail, on Dutch Hill and on the Hoosac Ridge Trail.

Within the South of Route 9 Project Area there is an opportunity to:

- Provide new vistas by creating new openings along existing roads and trails.
- Maintain existing permanent and temporary openings along roads and trails to perpetuate views of scenery.
- Maintain and enhance the vista on the AT/LT, the Dome and Dutch Hill.

## **9. Transportation**

Forest Plan Goal #14 is to “[p]rovide a safe, efficient, and effective Forest transportation system that meets both the needs of the public and the Forest Service (Forest Plan, p. 16). A Travel Analysis was completed for the South of Route 9 project area which includes a narrative of the existing condition and needs of the transportation system (Travel Analysis for the South of Route 9 Project, August 2014). The recommendations contained in the roads portion of the Travel Analysis provide the basis for the transportation management needs within the South of Route 9 project area.

### **Improve Safety on Forest Roads in the Project Area**

Some NFS Roads need to meet federal Highway Safety Act standards, i.e. Forest Service objective/operational maintenance level (OML) 3, 4 and 5 roads, and are in constant need of maintenance on a yearly basis. There is a need to review NFS roads and their uses in the area

to determine whether the maintenance is in line with the use needs or whether some roads can be maintained less often and reduced to a lower OML with standards less than Highway Safety Act requirements. Additionally, Forest road signing within the general project area has aged over the years and is in need of updating to meet federal signing regulations. This mostly involves replacing worn and/or illegible existing signing with more highly visible (retro-reflective) signing.

Within the South of Route 9 Project Area there is an opportunity to

- Review road maintenance levels to ensure Highway Safety Act standards are met where needed, and maintenance levels are reduced or increased as appropriate.
- Change and replace signing on many project area roads to comply with current signing regulations.

### **Align NFS Road Infrastructure with Current and Future Predicted Transportation Needs**

Existing conditions and some changes in use of roads require the Forest Service to re-evaluate Road Management Objectives (RMO's) for each of the three (3) existing National Forest System Roads (NFSR) within the project area. Existing and future predicted conditions for the NFSR within the project area were analyzed in a Travel Analysis completed in August 2014. This document makes recommendations for the future of the road system in the project area such as changes to RMO's, OML's, road and parking improvements, new temporary or permanent roads, and the decommissioning of roads.

Within the South of Route 9 Project Area there is an opportunity to:

- Implement recommendations made in the August 2014 Travel Analysis for NFS Roads within the project area.

### **Increase Cooperation with State and Local Governments and Private Land Owners on Management of the Area Road Infrastructure as it Relates to Forest Access**

There has been little work / cooperation on forest access projects with the State or private land owners in the project area over recent years. The Forest Service currently has a Forest Road Cooperative Agreement (FRCA) with the Town of Woodford that was signed in 1973, although there has been no cooperative work on area roads within the Town in recent years. None of the other Towns in the project area have signed FRCA's. To achieve Forest access improvements there is a need to consider updating the FRCA with the Town of Woodford and to also consider establishing FRCA's with the Towns of Readsboro, Stamford, Bennington, and Pownal. The Forest Service is committed to continuing cooperation with State, Town, and private entities when funding is available and where there is mutual benefit to the public.

Within the South of Route 9 Project Area there is an opportunity to:

- Explore new opportunities for cooperation with VTrans and project area Towns and private land owners to improve Forest access, reduce soil erosion, and discourage unauthorized off-road motorized activity.

### **Unauthorized Non-System Roads**

There are currently several existing unauthorized non-system roads and trails within the project area. These are accessed from Forest Roads 73, 264, 265, 273, and various State Highways and Town roads adjacent to NFS lands. These roads were either user created or were former temporary access points not blocked or closed adequately when timber sales or other activities were completed. These non-system roads and trails are intermittently providing unmanaged recreational access to ATV's and 4 wheel drive vehicles, and causing localized rutting and soil disturbance. If the unauthorized use of these non-system roads and trails is not addressed, more serious soil disturbance and resource damage could occur.

Within the South of Route 9 Project Area there is an opportunity to:

- Address unauthorized roads and skid trails which are causing some localized soil disturbance.

## **10. Heritage**

### **Enhance Protection, Stewardship and Knowledge of the Forest's Heritage Resources**

Forest Plan Goal #16 is to “[p]rovide protection and stewardship for significant heritage resources on the GMNF” (Forest Plan, p. 17). This protection/stewardship generally takes the form of identifying, evaluating and occasionally interpreting heritage sites; ensuring that Forest Service management and other activities do not harm them; and in some cases stabilizing the remains, removing encroaching vegetation, and making them more visible for the public.

Heritage resources are the archaeological and historic sites, structures, features, artifacts and landscapes created by people who lived and worked on the land in the past. The Forest Service has an obligation to protect and manage heritage resources that are or may be significant. Heritage resource sites are considered significant if they meet the criteria for inclusion on the National Register of Historic Places; if so, they are referred to as “Historic Properties”. More specifically, heritage resource sites on the Forest can include archaeological remains of Native American hunting and living sites, and sacred places; the remains of historic period farmsteads (such as cellar holes), mills, schools, cemeteries, stone fences/walls, transportation systems, charcoal kilns, and more; standing historic structures (such as buildings, fire towers, Civilian Conservation Corps (CCC) camps, Long Trail shelters, cairns, that are more than 50 years old); and (occasionally) entire landscapes that still reflect a past condition or land-use or significant event.

It is worth noting that sites on NFS lands tend to be better preserved than their counterparts on privately owned lands due to different developmental pressures and our legal obligation to provide stewardship. Therefore, over time, sites managed by the Forest Service become more significant because they represent an increasingly higher percentage of historic archaeological sites in the State that have good physical preservation.

Based on background information from our inventory of known sites, the use of the State-developed predictive/suitability model for the location of prehistoric archaeological sites, and broad scale field reconnaissance, we know that heritage sites occur in or near proposed Areas of Potential Effect (project activity areas) throughout the South of Route 9 project area. This demonstrates both a need to protect, and an opportunity to enhance, these sites.

We consult with federally recognized Native American tribes (primarily the Mohican) and engage in dialogue with our in-State Abenaki tribal partners like the El Nu Abenaki Tribe. Both Mohican and, to a perhaps lesser extent, Abenaki peoples/tribes (and their ancestors) used and laid claim to the area. Pre-contact Native American sites surely exist, but their visibility is very low. Despite numerous “finds” by individuals over the years there are only very few formally documented or excavated sites and just one large known site on Forest-owned lands. A suitability model indicates that the highest potential for preserved sites in the valleys and along significant drainages and wetlands, which could include large swaths of the study area.

The great majority of the known heritage resource sites in the project area date to the late 1700's through the early 1900's and include the remains of numerous farms, stream-side mills, charcoal kilns, some cemeteries, and historic roads. Many of these sites are at least partially visible on the surface and represent a land-use history that is often largely unknown to many

Forest users.

Within the South of Route 9 Project Area there is an opportunity to:

- Provide stewardship for heritage resource sites through mandated site inventory and protection.
- Increase site visibility and stability in the project area using volunteers, Vermont Youth Conservation Corps (VYCC) crews, and/or stewardship contracting at historic and “industrial” period sites (like the stone charcoal kiln sites),
- Work with GMNF wildlife staff and partners to stabilize historic archaeological sites through coordinated efforts related to releasing apple trees, establishing wildlife openings, and creating down woody debris habitat near historic period sites.
- Sponsor or encourage additional research on several historic and prehistoric sites.

### III. PROPOSED ACTION

This section provides the description of proposed management activities that together define the proposed action that addresses the purpose and need for each resource category within the South of Route 9 project area. The proposed action section answers the questions: “what is being proposed, how and when is it to be implemented, and where is it located?”

#### 1. Habitat Diversity

Appendix A, Table A-1 provides a summary of wildlife habitat treatments proposed within the South of Route 9 project area. Refer to Map 2 for treatment locations. Refer to the Timber Section for more detailed discussion of the proposed even-aged and uneven-aged harvest treatments.

##### **Diversify Composition and Age Class Structure of Habitat Types to Improve Wildlife Habitat**

The harvesting of timber is proposed to diversify the composition and age class structure of forest habitat types, which would improve overall compositional and structural diversity, and so improve wildlife habitat throughout the project area. The proposal includes the following activities:

- Increase early-successional (regenerating) habitat through clearcut, seed tree, and shelterwood harvesting on approximately **831 acres**.
- Enhance and increase softwood habitat through approximately **2,813 acres** of single-tree and group selection harvesting and improvement cuts in hardwood, mixedwood, and softwood stands.
- Enhance structural diversity through approximately **3,130 acres** of single-tree and group selection harvesting in hardwood, mixedwood, oak, and softwood stands.
- Enhance late successional habitats in the Diverse Backcountry MA through **2,027 acres** of thinning and improvement cuts to extend the growth and longevity of trees in areas of extended rotations of 150 to 200 years.

##### **Diversify Aspen Habitat**

The proposal includes regenerating aspen clones within approximately **35 acres** of existing hardwood habitats using clearcutting to enhance the abundance and distribution of this important but limited habitat feature.

### Enhance Oak Habitat

The proposal includes enhancing oak habitat at the Dome on approximately **429 acres** in Compartment 169 using a variety of silvicultural methods to increase the abundance and distribution of oak regeneration and reduce competition with other hardwoods in stands dominated by oak or with an oak component. Two-cut shelterwoods would be used to regenerate 55 acres of oak, while group selection would be used to release and create pockets of advanced regeneration with stands of mixed oak and northern hardwoods on about 71 acres. Thinning and improvement cuts on 303 acres would be used to release mid-canopy oaks, creating more open understory conditions to facilitate establishment of oak regeneration. In addition to these treatments, additional measures may be taken in these stands to assist in improving the conditions for oak regeneration, including:

- the use of mechanical treatment of beech and maple competition on appropriate sites,
- the use of summer/fall logging on appropriate sites to enable machinery to scarify the soil surface and ensure contact of acorns with mineral soil,
- the use of dormant season/early spring prescribed fire on appropriate sites to reduce beech and red maple competition, and expose a mineral soil seed bed for acorns
- the use of cut-surface application of glyphosate on beech competition, with emphasis on those stems either infected by beech bark disease or connected via root systems to infected trees.

The proposal also includes maintaining and enhancing an additional approximately **247 acres** of dry oak/pine/heath woodland and forest ecosystems in Stands 26 and 36 of Compartment 169 through the use of prescribed fire and, as needed, other mechanical means. The use of fire is intended to set back and/or kill other encroaching tree species such as beech, red maple, and paper birch; to rejuvenate heath plants, particularly those that are being shaded; to provide additional regeneration opportunities for red pine as well as chestnut, white, and red oaks; and otherwise to maintain the woodland mosaic character of these ecosystems. For the purposes of safe fire management, a larger area bounded by existing woods roads and trails that surround the two stands and includes additional dry-mesic oak forest would form the perimeter of a single landscape unit; this landscape unit would be approximately 500 acres. Within this landscape unit, our intention is to:

- Implement a series of prescribed fire treatments over the next 50 years within portions of the dry oak/pine/heath woodland and forest area to restore, improve and/or maintain the health of these fire dependent ecological systems. These treatments would achieve the specific management objectives outlined in the Purpose and Need and Forest Plan, including promoting the regeneration and vigor of desirable oak and pine species, improving wildlife habitat, maintaining the structural diversity of the forest/woodland/heath openings mosaic, and reducing competing native and non-native vegetation.
- Where prescribed fire implementation is not possible or practical, evaluate and/or implement other types of treatments (e.g. silvicultural methods, hand-cutting of competing trees) in order to mimic the effects of fire and achieve similar management objectives.
- When developing a burn plan for the area, consider the landscape context of the burn by incorporating actions that would reduce the potential for large contiguous areas or significant proportions of individual ecological communities to be severely impacted during a single fire event.
- Areas where beech and red maple are actively encroaching or where oak saplings and poles are limited would be prioritized for fire treatment to the greatest extent possible. These priorities would be balanced against the operational considerations for implementing landscape-scale prescribed fire, which allows fire to create a more natural mosaic pattern of effects.



- Implement fire management activities using a science-based approach that incorporates knowledge and understanding gained through monitoring and the adaptive management process.
- Conduct fire management activities in accordance with the highest operational standards and most current implementation techniques.

### **Deer Winter Areas**

Wintering habitat for white tailed deer would be maintained and enhanced through vegetation management to improve availability and quality of winter cover and browse. Only a small proportion of the State-mapped deer wintering areas overlap with NFS lands that are suitable for timber management within the project area. However, timber and vegetation management in the project area would provide improved, year-round habitat for deer. Even-aged regeneration treatments (clearcut, seed tree, and shelterwood), would promote hardwood and aspen regeneration that provide browse for deer and other wildlife. Some uneven-aged treatments (single-tree and group selection) would be laid out to encourage softwood regeneration that would provide winter cover. Permanent upland wildlife openings containing grasses, forbs, and shrubby browse provide important year-round habitat for deer, even if they are not within or adjacent to mapped deer wintering areas. Refer to the Timber Section for discussion of the proposed even-aged and uneven-aged harvest treatments and to the Restore and Expand Existing Permanent Upland Openings in this section.

### **Restore and Expand Existing Permanent Upland Openings**

The proposal would maintain and expand the size of one existing permanent upland opening (Compartment 169, Stand 101). This approximately one acre stand, used in the past as a log landing, includes several apple trees around its perimeter. The permanent opening would be expanded by less than one acre to include additional apple trees in the adjacent stand (Compartment 169, Stand 34). Restoration and continuing maintenance of this permanent opening would be accomplished through mechanical mowing; cutting with chainsaws, brush saws, or hand tools; prescribed burning; or a combination of these treatment methods. The opening would receive one to three treatments over a period of five to seven years. The treatment type, the number of treatments and the timing of treatments would depend on existing conditions compared to desired vegetative composition and structure identified for the opening.

Additionally, the proposal includes the creation of 14 new permanent upland openings with a combined total of about **237 acres**. Most of these openings would be between 10 and 20 acres in size, and are located near roads. These larger openings provide a relatively-greater benefit to wildlife than smaller openings, and future maintenance would be more cost effective. Once established, these newly-created permanent upland openings would be maintained as needed using the same treatment methods proposed for existing upland openings.

### **Apple Tree/Soft Mast Release and Pruning**

The proposal includes release and pruning of apple trees at 13 sites (see Appendix A) where they are known to occur. It is anticipated that more apple trees would be discovered during project planning and implementation. Any newly-discovered apple trees would be considered for inclusion in the proposal for release and pruning activity. Treatment would include removal of over-topping trees that shade the apples, as well as small saplings and pole-size trees near or under the canopy of individual apple trees. This work would be completed using hand tools such as bow saws, chain saws, and other portable cutting devices designed for removal of woody vegetation.

### **Create Down Woody Debris Habitat**

Cut and remove trees growing in and near select historical sites such as foundations of homes or mills, stone walls, charcoal kilns, etc. (see 10. Heritage Section). Trees cut to maintain these structures would be left on site and placed in such a way as to provide nesting, foraging, and travel habitat for small mammals, reptiles, and amphibians.

### **Areas of Special Significance**

The Soil/Wetlands and Recreation sections identify several proposed actions to protect significant wetlands in the project area, including actions associated with Forest Trail 391 and Corridor 9 which affect Thendara Camp Fen, and the closure/rehabilitation of old skid trails in the Stamford Meadows area. See these sections for further details.

## **2. Timber**

The proposal includes a variety of timber stand treatments on a total of **7,118 acres** to provide forest products to the local and regional economy, improve forest health and diversity, and to move the existing forest habitat composition and age class toward the objectives as provided in the Forest Plan and HMU analysis. Appendix A, Table A-1 lists a variety of treatments designed to benefit wildlife. Table A-2 lists the proposed harvest treatments, number of harvest acres for each Compartment/Stand and the actual treatment acres proposed for each harvest method. Table A-3 summarizes proposed harvest treatments. Table A-4 lists proposed stand improvement (TSI) for timber stands which have not reached commercial timber size yet. Table A-5 lists a summary of reforestation activities including site preparation for natural or artificial regeneration proposed for all stands receiving regeneration cuts. Table A-6 lists proposed prescribed fire treatment to promote oak woodlands. Map 2 shows the locations of the timber harvests and other treatments proposed within the South of Route 9 project area.

### **Harvest Treatments**

The following is a summary of the proposed harvest treatments and methods within the South of Route 9 project area:

#### **1. Uneven-aged Harvest Treatments**

There are a total of **4,098 acres** of uneven-aged harvest treatments proposed. An uneven-aged silvicultural system involves management of a forest to simultaneously maintain: a) continuous high-forest cover, b) recurring regeneration of desirable species, and c) orderly growth and development of trees through a range of diameter or age classes to provide a sustained yield of forest products. Cutting methods that develop and maintain uneven-aged stands are single tree selection and group selection.

- **Approximately 1,745 acres of single tree and group selection** would be conducted in thirty-four hardwood stands, two mixedwood stands, and two softwood stands. This harvest method removes selected single trees and groups of several trees at a time from three different size classes (poles 6 to 10 inches in diameter at breast height (DBH), small sawlogs up to 16 inches DBH and larger trees greater than 16 inches DBH. Basal area (BA) would be reduced to about 70 square feet per acre for hardwood stands, to about 100 square feet per acre in mixedwood stands, and to a range of 100 to 120 square feet per acre in softwood stands.

The cutting and removal of these trees would create small gaps in the forest canopy about 1/10 to 1/5 acre in size. This action would produce sawtimber and pulpwood products, and reduce overall stocking of trees to appropriate levels for small amounts of sunlight to reach the forest floor. This would favor mostly regeneration of shade tolerant

species of trees in the understory such as sugar maple, beech, hemlock, spruce and fir; and create a stand of trees of different sizes and ages.

Where inclusions of aspen occur or where shade mid-tolerant or intolerant species are desired, the gaps would be slightly larger, creating gaps in the canopy ranging from ¼ to 2 acres in size. This would favor the growing of aspen and desirable shade-intolerant hardwood that requires more sunlight. The single tree and group selection harvest method would be applied to hardwood stands (comprised of beech, birches, maples, ash, and oak); mixedwood stands (comprised of hardwoods mixed with white pine, spruce, fir and hemlock); and in softwood stands (comprised of mostly spruce, fir, white pine and hemlock).

- **Approximately 968 acres of improvement cut with gaps** would be conducted in fourteen hardwood stands, one mixedwood stand, and one softwood stand. This harvest method removes less desirable trees of any species in a stand, primarily to improve composition and quality. It would also create gaps of 1/10 of an acre up to 2 acres where there are pockets of diseased, poor form, high risk trees, mature aspen, or where increased light is desired such as around oak crop trees.
- **Approximately 1,385 acres of group selection** would be conducted in thirty-three hardwood stands and one mixedwood stand. With this harvest method, trees are removed and new age classes are established in small groups. The width of groups is commonly twice the height of mature trees with smaller openings providing microenvironments suitable for tolerant regeneration and larger openings providing conditions suitable for more intolerant regeneration. Groups can vary in size from 1/10 acre to 2 acres.

## 2. Even-aged Harvest Treatments

There are a total of **873 acres** of even-aged harvest treatments proposed. An even-aged silvicultural system produces stands in which all trees are about the same age; that is, the difference in age between trees forming the main crown canopy level will usually not exceed 20 percent of the rotation length.

**Regeneration Cuts** – *trees are removed from the stand to create conditions that will allow the forest to renew or reproduce itself.*

- **Approximately 663 acres of shelterwood** would be completed in 33 hardwood stands and one mixedwood stand. Shelterwood harvests regenerate low quality stands and mature stands that are declining in productivity through a series of two or three cuts. The types of treatments could include: 1) an optional preparatory cut to enhance conditions for seed production, 2) an establishment cut to prepare the seed bed and to create a new age class, and 3) a removal cut to release established regeneration from competition with the overstory. These shelterwood stands would be separated by forested conditions and manageable stands so that they do not border each other.
  - **Shelterwood establishment cut (two-cut treatment) would be completed** in thirty hardwood stands and one mixedwood stand (604 acres). Approximately two thirds of the trees would be removed in each stand. The remaining trees providing seed and shaded “shelter” to the new crop of understory trees may be harvested in about 3 to 5 years following initial harvest if compatible with other resources and after regeneration has been established.
  - **Shelterwood with reserves** would be completed in three hardwood stands (59 acres). Approximately two-thirds of the trees would be removed within these

stands. The remaining trees provide seed and shaded “shelter” to the new crop of understory trees. No overstory removal is planned. The remaining portion of the stand is retained at least 20 percent into the next rotation of the new stand, usually 40 to 60 years and could be removed at that time during the first thinning of the new stand as larger sawtimber.

- **Overstory removal on 42 acres** (from advanced regeneration) would be completed in one hardwood and one mixedwood stand. Overstory removal is the cutting of trees constituting an upper canopy layer to release understory trees. The primary source of regeneration is advance reproduction. This is a result of a stand that was previously harvested.
- **Approximately 31 acres of seed tree** would be completed in two hardwood stands. Seed tree harvests remove most of the mature timber from an area in one cut except for a small number of desirable trees retained to provide seed or shelter for regeneration. These seed tree stands would be separated by forested conditions and manageable stands.
- **Approximately 137 acres of clearcuts** would be completed in ten hardwood stands to regenerate the aspen/birch type, release existing softwood regeneration, and regenerate hardwood stands from stands that were low quality and high risk. The clearcut stands would have most trees removed, however, uncut patches totaling five percent of the harvested area would be retained to meet wildlife, visual, soil, and water quality Forest Plan standards and guidelines.

### **Intermediate Harvest Treatments**

There are a total of **1,576 acres** of intermediate harvest treatments proposed. An intermediate cut is the removal of trees from a stand sometime between the beginning of formation of the stand and the regeneration cut. Types of intermediate cuts include thinning, release, and improvement cuttings.

- **Approximately 820 acres of thinning** would be conducted in 18 hardwood stands and two mixedwood stands by removing individual trees to provide pockets of sunlight, growing space for improving growth on reserved trees while enhancing forest health through salvage of some dying trees. Basal area would be reduced to about 70 square feet per acre for hardwood stands, to about 100 square feet per acre in mixedwood stands, and to about 120 square feet per acre in softwood stands.
- **Approximately 748 acres of improvement cutting** would be conducted in 18 hardwood stands and two mixedwood stands by removing individual less desirable trees to improve the composition and quality of the trees within the stand. Residual spacing would likely be more than a thinning treatment.
- **Approximately 8 acres of sanitation cutting** would be conducted in 1 hardwood stand to improve stand health by removing trees with crown dieback and other low quality trees.

### **3. Land Clearing to Convert Forest to Openings**

**Approximately 237 acres of harvest to create upland openings** would be completed in 15 hardwood stands, two mixedwood stands, and part of one softwood stand. The timber harvest would be followed by land clearing to convert forested stands to permanent upland openings of early successional habitat. Often, patches of trees may be left uncut within the stand to provide

a diversity of habitat for wildlife or to meet some other need such as visuals or stream buffers. The amount of trees left could vary from just a few to a mosaic pattern within the stand and would usually be about 5 to 10 percent of the stand area. These stands would be separated by forested stands.

#### 4. Estimated Timber Volume

The amount of sawlogs and pulpwood that could be produced from all uneven-aged and even-aged treatments is estimated to be 25 million board feet (MMBF) or 42,000 hundred cubic feet (CCF). The breakdown of wood products is approximately:

- 17,000 CCF of sawlogs
- 25,000 CCF of pulpwood

Another measurement some may be more familiar with is:

- 10 million board feet (MMBF) of sawtimber
- 32,000 cords of pulpwood

#### **Other Silvicultural Treatments**

- Stand Improvement: There are approximately **87 acres of stand improvements** (pre-commercial thinning) proposed to improve the composition, structure, condition, health and growth of young even-aged stands. These stands are generally less than 25 years old, created from past even-aged regeneration harvests. Within these stands, crop trees of desired species would be selected on a spacing of about 16 x 16 feet. Less desirable competing trees touching the crowns of the crop trees would be cut away to allow for better growth of selected crop trees intended to become a component of future commercial harvest.
- American Chestnut Seedlings: Planting of 100 or more American chestnut seedlings is proposed within the South of Route 9 project area to introduce blight resistant chestnut.
- Prescribed Fire: There are approximately **247 acres** of oak stands proposed for prescribed fire over the long-term in areas where timber harvest is less suited along ridges with shallow soils and somewhat stunted tree growth. Prescribed fire would be used periodically in parts of this area to maintain it as a mosaic of dry oak forest, dry oak woodland, and heath openings (See also previous Habitat Diversity Section).

#### **Post-Harvest Activities**

- Site Preparation: There are approximately **4,983 acres of site preparation** proposed to provide for natural or artificial regeneration of harvested stands. Following harvest by the shelterwood, seed tree, single/group selection, overstory removal, and clearcut methods; saplings of tree species 1 to 6 inches DBH that may be bent or broken, not commercially valuable or less desirable would be cut within one year following the harvest. This preparation of the site allows more space and sunlight for the establishment of more desired timber species.
- Permanent Opening Creation: There are approximately **237 acres of vegetation clearing** proposed to complete the creation of permanent upland openings after the stands have been harvested. Following harvest, saplings of tree species 1 to 6 inches DBH that are not needed for wildlife would be cut within one year following harvest. This post-sale treatment allows for the growth of early successional habitat. Stumps would be left in the openings and the harvest and clearing slash piled and/or burned.

- **Stocking Surveys:** Tree stocking surveys would be conducted following the first and third year of harvest to monitor regeneration success in all stands proposed for regeneration treatments (clearcuts, shelterwoods, shelterwood with reserves, seed tree, overstory removals, single tree selection, and group selection harvest methods).
- **Tree Planting:** Although unlikely, if stocking surveys determine natural regeneration is not adequate in any of the regeneration harvest treatment areas, tree planting would be necessary. To have adequate stocking, a stand should have at least 50 percent of the plots with at least one acceptable growing stock by the third year after harvest. If planting is necessary, a mix of native softwood species would be planted on a 4 foot by 4 foot spacing in areas proposed for regeneration to softwoods or mixedwood. The mix of native softwoods would improve cover and forage availability for big game. In areas to be regenerated to hardwoods, desired species would be planted. In the case of the proposed clearcuts, quaking aspen and paper birch are the desired hardwood species. Direct seeding through broadcast or aerial means is another option to hand planting.

### **Transportation Network**

Town roads, NFS Roads and skid roads/trails would be used for log truck access to existing log landings. Existing log landings and skid roads/trails that meet current Forest Plan Standards and Guidelines would be used again for logging. There is a need to locate and construct new log landings, and some sections of skid roads/trails to access all areas being considered for harvest. It is anticipated that approximately 12 existing log landings would be used, and 29 new log landings would be constructed to meet the needs associated with proposed harvest treatments. Specific locations for new landings and skid roads/skid trails would be mutually agreed to by the sale(s) purchaser and the Forest Service.

The construction of temporary roads, and any improvement and/or maintenance needs associated with the existing transportation network to support timber harvest activities are discussed in the Transportation Section.

### **Timing of Harvest Treatments Implementation**

The harvesting proposed within the project area would be packaged in a series of timber sales and/ or stewardship contracts and agreements which would likely be conducted within a 5 to 7 year period. This project lends itself to the implementation of several timber sales or stewardship contracts/ agreements of various sizes. The size and timing of the contract offerings and implementation of harvests would be determined by market conditions, interest and collaboration for stewardship contracts, and feedback from timber purchasers.

## **3. Non-Native Invasive Plants**

Non-native invasive plant (NNIP) control on NFS and non-NFS lands within the South of Route 9 project area have been previously authorized in the Forest-wide Non-Native Invasive Plant Control Project Decision Notice dated October 19, 2010 and Supplemental Information Report dated June 2014. Under this decision, any existing or future NNIP infestations located on NFS and non-NFS lands within the project area may be treated using a variety of control methods (mechanical, manual, physical, prescribed fire, chemical, biological, or domestic grazing).

Specific proposals for the project area include:

- Conducting some site-specific treatments to protect rare plants as proposed in the Botany section below.
- Proposed collaboration, if landowners are willing and interested (most have not yet been contacted):

- Rattlesnake Fen: control a single glossy buckthorn and about 100 small to medium honeysuckle to protect this unique habitat.
- In Woodford, work cooperatively with willing adjacent landowners infestations to control a number of NNIP that occur along Burgess Road and FR 363.
- On NFS land along Route 73 in the towns of Woodford and Readsboro, work cooperatively with towns and willing adjacent landowners to control infestations of Morrow honeysuckle.
- Along FR 264 and the Roaring Brook in Stamford, work cooperatively with willing adjacent landowners to treat NNIP in Rattlesnake Fen: control a single glossy buckthorn and about 100 small to medium honeysuckle to protect this unique habitat.
- Form a CWMA (Cooperative Weed Management Association) with the towns of Readsboro and Pownal, and any other interested partners to address NNIP along roads in the project area. In the southern part of Pownal, there are extensive infestations of Norway maple, garlic mustard, Japanese barberry, common bittersweet, Morrow honeysuckle, common buckthorn, and multiflora rose that occur together on NFS land and on adjacent land to the south and west. There is also an infestation of narrowleaf bittercress, which is relatively new to the GMNF. Although not on NFS land, this would be a perfect opportunity to control a honeysuckle patch that is on a combination of NFS and other land, and is intermingled with smaller garlic mustard and goutweed infestations on private land.

## 4. Botany

### Improve Rare Plant Habitat

- Narrow blue-eyed grass (*Sisyrinchium angustifolium*) occurs in a log landing along the Brook Road extension that runs through C 163/ S 26; this road is proposed for use as a temporary haul road. We propose controlling the tiny infestation of multiflora rose in the log landing, monitoring the Morrow honeysuckle that has already been pulled there, and treating the rest of the NNIP infestations that occur along Brook Road extension (primarily the same species, plus Japanese barberry). The rare plants are along the edge of the NE edge of the landing and should be able to be avoided during use of the landing.
- Long-fruited snakeroot (*Sanicula trifoliata*) grows along this same road (Broad Brook extension) in the same stand (C163/ S 26), with one small Japanese barberry infestation co-occurring. We propose treating the barberry, and if summer harvest occurs, avoiding the plants.
- Purple giant hyssop (*Agastache scrophulariifolia*) is historically known from C 169/ S 9 (where thinning is proposed), last seen in 1982. As a species of dry hedgerows and woods roads, it might benefit from some opening of the canopy. In addition, its historical location now overlaps with infestations of common buckthorn, multiflora rose, Morrow honeysuckle, and Japanese barberry. While creating an opening and reintroducing the species (if a suitable seed source is available) is a possibility, at this time we propose thinning in what is believed to be its original location, to see if there is a seed bank that responds to increased sunlight. Treating the NNIP (Norway maple, oriental bittersweet, and purple loosestrife) along the Broad Brook Trail at the same time is also proposed.
- Poke milkweed (*Asclepias exaltata*) occurs along the Old Military Road and along the Dome Trail. Plants are not flowering, perhaps due to heavy shade, but could also be in the way of logging use of those roads. Three of the sub-populations overlap with stands 32 and 35 in C 169, where 3-cut shelterwood and thinning are proposed, respectively. We propose increasing light coming through the canopy, but not creating a canopy gap, directly above these plants, and comparing results to the two other sub-populations that

aren't in areas where vegetation management is proposed. In addition, a mitigation plan for avoiding direct impact to the plants during harvest will be needed.

- At a site we call the Dome Limy Seep several rare plants, a mix of RFSS and plants that are tracked as rare in the state, co-occur: poke milkweed (*Asclepias exaltata*), sweet joe-pye weed (*Eupatorium purpureum*), perfoliate bellwort (*Uvularia perfoliata*), large yellow lady's-slipper (*Cypripedium parviflorum* var. *pubescens*), and pignut hickory (*Carya glabra*). This site is within C 169/ S 9, and is not proposed for vegetation management; we propose removal of a small number of trees and saplings (chopping and dropping away from the rare plants, being careful not to remove any pignut hickories in the process. The multiflora rose here in the logging road should be treated at the same time.
- Pignut hickory (*Carya glabra*) saplings occur in C 169/ S 9 (addressed above) and C 169/ S 32. Since this species prefers forest edges in roads and power line ROWs, it would probably benefit from increased sunlight. The 2-cut shelterwood and improvement cut proposed in C 169/ S 32, might benefit this species, as long as it is retained, not cut. We propose releasing these pignut hickory saplings during the initial cut, and treating competing saplings, post-harvest. Since its associated species include Morrow honeysuckle, multiflora rose, common buckthorn, and Japanese barberry, NNIP control should occur at the same time.
- Showy lady's-slipper (*Cypripedium reginae*), which apparently used to be on GMNF land but is now just south of there, might benefit and be more likely to bloom if it got less shade. We propose removing a few conifers on the adjacent GMNF land in C 163/ S 27, to facilitate its potential to spread back onto GMNF. In addition, adjacent Morrow honeysuckle and multiflora rose shrubs should be treated. Large yellow lady's-slipper (*Cypripedium parviflorum*) occurs nearby and would also benefit from removing these NNIP. In addition we would be interested in working with the adjacent landowner, if they would be willing to have a small canopy gap created over the showy lady's slippers.
- Large-whorled pogonia (*Isotria verticillata*) occurs along the west edge of C 169/ S 38, and in S 32, S 33, S 35 (all proposed for various types of timber harvest); in S 26 (proposed for prescribed fire); and in S 9, where nothing is proposed. Most of the plants are not blooming, and while it is possible that the increased light will benefit this species, we are uncertain what its response will be. Given that this is a state-listed species, we propose that at each treatment location, at least half of the area where large-whorled pogonia grows be left untouched. This will allow us to protect the overall population, as well as to monitor the effects and compare results in treated vs. untreated portions of the population. Also, methods of implementation should be developed that minimize direct effects. In particular, the middle of the logging road (the Agawon to Dome Trail Connector) through stand 33 has the densest population of large-whorled pogonia, and we propose using the road in winter only to protect these plants.
- Large-whorled pogonia (see above proposal) is strongly associated with Sassafras (*Sassafras albidum*) and three-leaved rattlesnake-root (*Nabalus trifoliolatus*). Nothing is proposed for three-leaved rattlesnake root, which is most abundant along the banks of the Old Military road, since all the proposed treatments are likely to result in more flowering individuals. Sassafras occurs in C 169/S 35 & 38 & 32 (proposed for thinning) and S 32 (proposed for improvement cut and 2-cut shelterwood). We propose carefully avoiding it in locations where thinning and improvement cuts would occur, since it is likely to benefit from the decreased competition and increased light, and we also propose avoiding it entirely where shelterwood is proposed, because of the potential for it to be out-competed by regenerating saplings of other species. Sassafras occurs in S 26 and 36 (proposed for prescribed fire); since it resprouts after fire, we propose that the fire be used to benefit this species.



- Yellow lady's-slipper (*Cypripedium parviflorum* var. *pubescens*) and other rare plants have potential habitat in the limy seeps in C 169/ S 33, there are limy seeps. We propose that these limy seeps (not yet mapped) remain untouched.
- Perfoliate bellwort (*Uvularia perfoliata*) occurs along Old Military Road where it intersects with an old log road that heads east, and has the potential to be trampled by trail use; garlic mustard is encroaching upon these plants, as well. We propose constructing a barrier such as a stone wall between Old Military Road and the bank where it grows and closing the log road, so it's not used. We also propose treating the garlic mustard in the vicinity of the plants, and expanding the treatment area as feasible to include the entire infestation. Treatment will most likely need to occur for several years in a row.
- Roundleaf goldenrod (*Solidago patula*) and Huron orchid (*Platanthera huronensis*) occur in the fen east of Old Military Road, and garlic mustard is encroaching upon the site. We propose treating the garlic mustard in the immediate vicinity (the entire infestation is extensive), and expanding the treatment as feasible. A foliar spot spray early in the season may be best, if the two rare species can be avoided.
- Two small (6" tall) individuals of mountain laurel (*Kalmia latifolia*) occur in the project area; one is about 1-2' off the Brook Road extension, which is a logging access road, and the other does not appear to be on NFS land. Their small stature appears to be the result of deer browse, and we propose creating an enclosure for the one on NFS land and for the other if the landowner is interested. Protection during use of the logging road may also be necessary, since the one plant is so close to the road.
- Butternut (*Juglans cinerea*) occurs in the opening that would be expanded during the proposed clearcut of C 169/ S 34. We propose retaining the butternut, which would benefit from increased light, and controlling the garlic mustard, which is just beginning to come up the Dome Trail and encroach on this site. The garlic mustard should be treated prior to the clearcut, and monitored and retreated as needed.
- Water sedge (*Carex aquatilis* var. *substricta*) used to occur in the Stamford Stream Complex, but has not been found in recent years, possibly due to beaver activity changing the habitat suitability. Half dozen glossy buckthorn shrubs were found in the spruce bog on the north side of the fen, and we propose controlling the glossy buckthorn to preserve potential habitat, if the water sedge returns.
- Shore sedge (*Carex lenticularis*) and long sedge (*Carex folliculata*) occur at Sucker Pond, where glossy buckthorn also occurs. We propose treating the glossy buckthorn.

## **5. Fisheries and Water**

Refer to Map 3 for the locations of proposed fisheries habitat treatments.

### **Placement of Large Woody Debris**

To increase existing instream large woody debris (LWD) amounts from 20 pieces per mile to approximately 175 pieces per mile up to 2061 trees are proposed to be placed in stream channels in sections of Roaring Branch, Broad Brook and Roaring Brook and their tributaries. This would restore stream processes and LWD functions such as pool development, protective cover, and trapping and sorting of spawning gravel. Large woody debris placement would be done in approximately 13.3 miles of stream within the project area (See Map 3).

Of the trees to be felled, about half would be a minimum of 12 inch diameter at breast height (DBH) with the other half between 8 to 12 inches DBH. The primary placement of trees would be accomplished through directional felling with chain saws. In the largest stream channels a grip hoist would be used to pull over trees so that roots remain attached and reduce the potential for flood flows to move them downstream. A grip hoist or log carrier may be used to assist in placing the trees in desired stream locations. Heavy equipment (tracked excavator)

may be used to place LW into Roaring Brook where it is next to the road. Use of heavy equipment would allow for secure anchoring of trees so their movement would not jeopardize Forest Road 264.

Table 5.1 lists the streams and tributaries where LWD placements are proposed in the Roaring Branch, Roaring Brook and Broad Brook subwatersheds.

<b>Table 5.1: Proposed streams and number of pieces of large woody debris.</b>		
<b>Stream name</b>	<b>Proposed Miles LWD Placement</b>	<b>Proposed Number LWD Pieces</b>
Roaring Branch	0.7	108.5
Broad Brook Un-named Tributary	1.1	170.5
Brook Brook	4.3	666.5
Cardinal Brook	1.5	232.5
Nunge Brook	1.2	186
Roaring Brook	1.5	232.5
Roaring Brook Un-named Tributary	1.3	201.5
Crazy John Stream	0.9	139.5
Crazy John Stream Tributary	0.8	124
Total in Project Area	13.3	2061.5

### **Provide Fish Passage**

Replace or retrofit three culverts to provide upstream aquatic organism passage in:

1. Forest Road 264 at approximate mile post 0.30 crossing an un-named tributary to Roaring Brook.
2. Forest Road 73 at approximate Mile post 1.55 crossing an un-named tributary to the West Branch of the Deerfield River.
3. Forest Road 273 approximately 0.19 miles south of the Old Stage Road crossing an un-named tributary of Stamford Stream.

Fish passage improvement work at culverts may require the use of heavy equipment where access and stream size would render such activities feasible and necessary. Project work would include completion of detailed, existing condition assessments, designing of retrofits to existing structures or replacement crossing structures in the same location, and constructing the retrofits or replacements to Forest Service Stream Simulation Design standards. Replacement structures would be bottomless arches, buried culverts or bridges.

## **6. Soil and Wetlands**

Refer to Map 3 for the locations of proposed soil and watershed condition improvement projects.

### **Improve soils and watershed conditions**

Soil and wetland rehabilitation work would be integrated into several Recreation and Transportation proposed projects (see these sections for additional information). Proposed

activities related to soil and water improvement within the project area are described below.

- Forest Trail 391: Install earthen berms or boulders to discourage unauthorized ATV traffic. Install water bars and drainage structures on the section of FT 391 just south of the old stage trail proposed for closure, in conjunction with a trail reroute around the fen. Estimated length of trail to be improved is 1.0 miles. Estimated length of parallel trail needing soil restoration is 0.1 miles.
- Sucker Pond Trail: Install erosion and drainage control structures in conjunction with trail restoration and planning. Estimated length of road to be improved is 3.1 miles.
- Stamford Meadows (old skid roads): Install water bars to stabilize soils, reducing the risk of sediment reaching the stream. Install signs and/or physical barriers at several closures identifying appropriate road uses (for example, hiking, and cross country skiing) to help stop unauthorized ATV/ORV use, and allow the soil and vegetation to be restored. Remove culverts and install water bars. Estimated length of skid road to be closed and rehabilitated is 5.1 miles.
- The Dome Trail (proposed hiking trail): Install water bars and drainage ditches to address existing and minimize potential future erosion, in conjunction with timber and recreation. Estimated length of trail to be improved is 1.1 miles.
- Dutch Hill (old ski area work roads and ski trails): Close these roads/trails using an earthen berm or boulders, at the top and bottom of NFS ownership. Work with the Town of Readsboro on soil restoration on the Legal Town Trail under their jurisdiction. Install water bars and drainage ditches to reduce erosion; use large woody debris across ski area work roads and trails to reduce erosion and discourage ATV use; seed and mulch as needed. Remove some old pieces of equipment. Work would be done in conjunction with vegetation management projects. Estimated length of roads/trails to be closed is 2.3 miles.
- Old Stage Trail: Install drivable water bars and drainage ditches to minimize current and future erosion. Estimated length of road to be improved is 0.7 miles.
- Stamford Meadows Southeast ("loop road"): Rehabilitate rutted sections of road, install water bars and adequate drainage structures, mulch and seed, and remove the bridge in the northeast corner. Control ATV and unauthorized 4WD truck use using styles, gates, signs, berms, and/or boulders. Road closure and/or rehabilitation measures would be made in conjunction with vegetation management in this area. Estimated length of road to be improved is 2.5 miles.
- FT 394, Stamford Pond Trail (Snowmobile trail): Water bars and drainage structures would be installed to stabilize soils. Gates would be installed to control summer ORV use and gates opened to allow snowmobile use in the winter. Estimated length of trail to be improved is 3.0 miles.
- Heartwellville Access Road: Install a road closure device (styles, gate, berm, or boulders) at the entrance from Route 100 to prevent entry into the wetland and its protective strip by 4WDs. Estimated length of road to be improved is 0.25 miles.
- Roaring Brook Road (FR 264): Install drivable water bars and drainage ditches to minimize current and future erosion. Estimated length of road to be improved is 1.5 miles.

## **7. Recreation**

Refer to Map 3 for the locations of proposed recreation activities.

### **Summer Motorized Use Trails**

The FS proposes to allow summer motorized use by ATVs, utility terrain vehicles (UTVs), dirt bikes and motor bikes on the following trails that will provide a connection to an existing summer motorized use trail systems and motorized use trails systems that are in the planning and development stages:

- **Risky Ranch Connector Motorized Trail**

The Forest Service proposes to develop a connecting trail between Risky Ranch Road and County Road on the abandoned town road on NFS lands in Pownal to complete the loop ATV trail system that already exists on Class 4 Town Roads in Stamford and Pownal. This trail would be managed for all-terrain vehicles, utility terrain vehicles, dirt bikes and motor bikes as well as all non-motorized activities. Work to bring the connector to standard would include drainage work, trail tread stabilization; and brush removal. Forest Service staff anticipates trail reconstruction would be done using a tractor/excavator adding material as needed to improve the surface. The approximate length of this connector trail is .33 miles.

- **Sucker Pond Motorized Trail**

The Forest Service proposes to rehabilitate the existing non-system trail/road from the Stamford/Woodford town lines to County Road (4.3 miles). The trail rehabilitation would require drainage structures particularly in wet areas, grading, and one bridge. Forest Service staff anticipates trail reconstruction would be done using a tractor/excavator adding material as needed to improve the surface. A portion of this route would also need to be improved for proposed timber harvest treatments with access coming from the County Road side. This route would be managed for multiple uses including motorized uses: ATVs, UTVs, dirt bikes and motor bikes, and snowmobiles; and non-motorized uses: horse, bicycles, dog sleds, cross country skiing, snowshoeing, and hiking.

The proposed trail would also continue to provide full-size vehicles access for landowners that have access to camps near Lake Hancock (aka Sucker Pond) through existing easements or rights of ways. Gates or barriers would be installed on the north and south ends to prevent unauthorized vehicle access by full-size vehicles not associated with existing camps. The trail would connect existing VASA trails in Pownal and Woodford and is already part of the VAST statewide snowmobile trails system. Barriers would also be created along the trail in areas where needed to prevent unauthorized use in areas where this has previously occurred. Important connections to trails on Class 4 Town Roads and Legal Trails in Stamford, Pownal, and Woodford would be provided by the Sucker Pond Trail. Trailheads are being proposed for the intersection of County Road and the Sucker Pond Trail providing access from the south and in an open area known as Rose Barn on FR 363 Burgess Road to provide access from the north.

- **Corridor 9 - FT 391 Motorized Trail**

The Forest Service proposes to relocate FT 391 away from Thendara Camp Fen to the east of the Fen on higher ground in order to eliminate the resource damage that has been occurring to the Fen from sedimentation and rutting caused by unauthorized summer motor vehicle use on the trail. Approximately 0.30 miles of trail would need to be relocated away from the Fen. A portion of the trail that was once on the Old Stage Trail and was relocated to go around a camp garage just east of FR 273 would be relocated onto NFS land to eliminate a steep, bedrock area, private property and sharp turning radius. This relocation would consist of approximately .30 miles. Other portions of the trail would receive drainage structures and erosion control. FT 391 is presently managed for snowmobile use by the Forest Service and is on the VAST system of snowmobile trails as a corridor trail. Portions of the trail coinciding with a road ("Old Stage Road") listed by the Town of Woodford as a Class 4 Town Highway has authorized ATV use.

The Forest Service proposes to manage FT 391 – Corridor 9 for multiple uses including motorized uses: ATVs, UTVs, dirt bikes and motor bikes, and snowmobiles; and non-motorized uses: horses, bicycles, dog sleds, cross country skiing, snowshoeing, and hiking from FR 73 to FR 363. The addition of ATVs, UTVs, dirt bikes and motor bikes uses to this

trail would connect ATV routes in Readsboro, an ATV trail system that VASA and local residents are working on developing in the Readsboro area, and the trailhead on FR 73 in Readsboro with Class 4 Town Roads and Legal Trails in Stamford, Pownal, Readsboro and Woodford. Gates or barriers would be installed on the east at the end of maintenance for FR 73, where the trail meets FR 273 on the west and at the FT 391 terminus where it intersects FR 363. A trailhead is being proposed at the end of maintenance on FR 273. Forest Service staff anticipates trail relocations and rehabilitation would be done using a tractor/excavator and other mechanized/motorized methods.

### **Snowmobile Trails**

- **Hoosac Ridge Motorized Trail**

The Forest Service proposes to rehabilitate and relocate as needed the 3.5 mile existing unmanaged trail between Smith Drive and Readsboro Legal Trail 1, on Dutch Hill within the Town of Readsboro. Areas to be relocated would be places where the trail is adjacent to or traverses wetlands, and trail segments that are not currently on NFS lands. Relocations would use skid trails created during the proposed timber harvesting to the extent possible. The existing trail tread would be rehabilitated where necessary to provide for multiple uses including snowmobiles and non-motorized uses such as hiking, cross country skiing, snowshoeing, bicycles, and horses. A trailhead is being proposed for the south end of the trail off of Smith Drive on NFS lands. Forest Service staff anticipates trail rehabilitation and relocation would be done using a tractor/excavator and other mechanized/motorized methods.

### **Non-motorized Trails**

- **The Dome, Agawon and Broad Brook Non-motorized Trails**

The Forest Service proposes to rehabilitate portions of the Dome Trail from the White Oaks Road trailhead to the NFS boundary near the top of the Dome. The project would involve 2.5 miles of trail including drainage work, trail tread stabilization; and creation of suitable crossings such as puncheon in wet areas. A small part of the Dome Trail near the top of the Dome would be relocated out of a wet area and stream bed. The Forest Service proposes to relocate portions (approximately 1.26 miles) of the Broad Brook Trail southwest of the Agawon Trail to eliminate difficult stream crossings, move the trail onto NFS land, and connect the trail with the Dome Trailhead. Other work on the trail would include drainage work, trail tread stabilization, and brush removal. The Forest Service proposes to create switchbacks or climbing turns on the steep portions of the Agawon trail to create a less erosive and more sustainable trail tread that connects the Dome Trail and Broad Brook Trail, thereby creating a loop trail for hikers. Forest Service staff anticipates trail reconstruction to be done using a small tractor/excavator where feasible, and hand tools on most areas of the trail due to the terrain. These trails are proposed to be managed for hiking, snowshoeing and cross country skiing. These trails traverse areas with a number of unusual natural communities thus providing future opportunities for environmental and historic interpretation.

The project would require the improvement of a trailhead off of White Oaks Road in Pownal to accommodate users of the three trails at one trailhead. The trailhead would accommodate approximately six automobiles. A new trailhead is proposed for the intersection of County Road and the Sucker Pond Trail providing access from the north.

- **West Hill Loop Non-motorized Trail**

The Forest Service proposes to maintain the existing loop trail south and west of the proposed Hoosac Ridge trail as a hiking, biking, snowshoeing and cross country skiing trail. This would provide a shorter loop opportunity on an old skid trail that needs basic drainage

and trail tread maintenance. Forest Service staff anticipates maintenance to be done with hand tools or a small tractor.

<b>Table 7.1: Proposed trails and proposed managed uses.</b>	
<b>Proposed trail</b>	<b>Proposed managed uses</b>
Risky Ranch Connector	ATVs, UTVs, dirt bikes and motor bikes Horse, bicycle, pedestrian
Sucker Pond Trail	ATVs, UTVs, dirt bikes and motor bikes, snowmobile Horse, bicycle, dog sled, pedestrian
FT 391 Corridor 9	ATVs, UTVs, dirt bikes and motor bikes, snowmobile Horse, bicycle, dog sled, pedestrian
Hoosac Ridge Trail	Snowmobile Horse, bicycle, dog sled, pedestrian
The Dome Trail	Pedestrian
Agawon Trail	Pedestrian
Broad Brook	Pedestrian
West Loop	Bicycle, pedestrian

### **Seth Warner AT/LT Trail Shelter**

The Forest Service in partnership with the Green Mountain Club proposes to reconstruct the Seth Warner Shelter and moldering accessible privy at a new location north of County Road on the hillside south of the beaver pond at the base of Scrub Hill. The shelter site would be less accessible by vehicle and would have a water source. The new shelter would accommodate 15 people and would also replace the Congdon Shelter and privy when it reaches its life expectancy and is in need of replacement. The Congdon Shelter would continue to be available until that time. Construction materials would likely be airlifted into the site.

## **8. Scenery**

Refer to Maps 2 and 3 for locations of proposed scenery management treatments.

### **Vista Maintenance and Creation**

The Forest Service proposes to enhance visual resources in six areas through selective cutting of trees.

- The Dome: maintain vista to Mount Greylock from the huckleberry opening just off the proposed Dome Trail through vegetation management of the huckleberry opening.
- FT 1, the AT/LT: north of County Road enhance views of Mount Greylock looking south from the AT/LT in C148S14 by selective tree cutting and limb removal, maintain and enhance views to the west from the high plateau in C148S35 by cutting brush, and enhance views of mountains looking north from the AT/LT on the decent from the plateau in C148S35 S45 by selective tree cutting and limb removal. Approximately 20 feet north of intersection with FT 391 enhance views looking north to mountains from the AT/LT in C129S39. View maintenance and enhancement will be done using hand tools or chain saws.
- Hoosac Ridge: enhance vista to northeast of the valley and ridgeline from a high point on the proposed the Hoosac Trail located north of Case Lane in C130 stands 21 and 18. There may also be an opportunity to enhance views from the former Dutch Hill Ski Area which is accessible from Readsboro Legal Trail 1. View enhancement will likely be done

using hand tools or chain saws. Some enhancement may be accomplished through proposed vegetation treatments.

## **9. Transportation**

Refer to Maps 1, 2 and 3 for location of existing road network and key proposed transportation related activities. All proposed road activities would be implemented using customary mechanized power equipment and machinery unless noted otherwise.

### **Improve Safety on Forest Roads in the Project Area**

- Review area roads for current and expected use and budgets, and assign an Objective/Operational Maintenance Level appropriate for each road to ensure the Forest's ability to maintain roads according to Highway Safety Act standards where needed.
- Remove and replace any non-compliant traffic and route marker signing on all existing or new project area NFS roads with new, more highly visible (retro-reflective) signing. Add any new signing as required by the current edition of the Manual on Uniform Traffic Control Devices (MUTCD).

### **Align NFS Road Infrastructure with Current and Future Predicted Transportation Needs**

- NFS Road 73: Increase maintenance level of this road in Readsboro/Woodford to OpML-3 to align with increased use and recent infrastructure improvements. Clarify jurisdictional questions with the Towns of Readsboro and Woodford and consider other trail opportunities (see Recreation section). Replace existing culvert at Mud Pond stream crossing (mile 1.55) with new aquatic organism passage (AOP) structure. Make bridge repairs including re-decking and replacing cap beams and bearings at bridge over West Branch of Deerfield River (mile 1.0). Install a gate at mile 0.2 near beginning of road to protect it during mud season. Retain and make small repairs to the snowmobile / winter parking area near beginning of road.
- NFS Road 264: Make needed improvements to this road in Stamford through timber management / sales, stewardship agreements, and possible cooperative work with the Town and/or private landowners along the road. Continue to maintain as an open 4WD (high clearance) road with emphasis on drainage structures (ditches, bridges and culverts), prevention of sedimentation of nearby Roaring Brook, and storm resiliency. Replace / retrofit two existing culverts along lower section of road (near mile 0.3) with AOP structures.
- NFS Road 265: Make needed improvements to this road in Stamford through timber management / sales, stewardship agreements, and possible cooperative work with private landowners along the road. Continue to maintain as an open 4WD (high clearance) road with emphasis on drainage structures (ditches and culverts), prevention of sedimentation of nearby streams, and storm resiliency.
- Develop a gravel pit at a finger shaped landform to the south of the NFS Road 265 and north of Cardinal Brook. This gravel would primarily be used to improve NFS roads and trails in the project area and south of State Route 9.
- NFS Road 273: Increase maintenance level of this road in Woodford/Stamford to align with increased use due to loss of access to area via Dunville Hollow Road to the west. Make needed improvements through partnerships/agreements with private landowners or possible future timber sales. Make improvements to large culverts at mile 2.0 and 2.8 to increase storm resiliency and aquatic organism passage. Make needed drainage improvements to

the section of road closed to public highway legal vehicles to ensure future trail and administrative use.

- Improve and designate parking areas / trail heads in coordination with Towns and private landowners at the following locations:
  - Off Burgess Road (TH 7) in Woodford at an open area known as Rose Barn. Improve for multiple use trailer parking to allow for up to 5 trailer units.
  - Off Smith Road (TH 18) in Readsboro at approximate mile 0.7. Improve for snowmobile parking to allow for up to 5 trailer units.
  - Off White Oaks Road (TH 35) in Pownal at approximate mile 0.5. Improve for the proposed Dome Trail trailhead parking for up to 10 automobiles.
  - Off County Road (TH 12) in Stamford at approximately 1.0 miles from the Pownal town line. Improve for multiple use trailer parking to allow for up to 5 trailer units.
  - Off NFSR 273 in Woodford at mile 0.1. Improve for multiple use trailer parking to allow for up to 5 trailer units.
- Develop temporary haul roads in coordination with VTrans, Towns, and private landowners to complete access needed to compartments as follows:
  - Compartment 127: Use access provided by NFSR273 and create temporary haul roads off of NFSR273 as needed.
  - Compartment 120: Use access provided by VT-8, US-100, Howe Pond Road, Daubneys Drive, Rue Madeline, and create temporary haul roads off these roads as needed.
  - Compartment 130: Use access provided by Case Lane, Daubneys Drive, and create temporary haul roads off these roads as needed.
  - Compartment 165: Use access provided by Smith Drive, Wiley Mountain Drive, and create temporary haul roads off these roads as needed.
  - Compartment 148: Use access provided by NFSR 264 and 265, Maltese Road, County Road, and create temporary haul roads off these roads as needed.
  - Compartment 135: Use access provided by County Road & Risky Ranch Road, and create temporary haul roads off these roads as needed.
  - Compartment 138: Use access provided by County Road and create temporary haul roads off these roads as needed.
  - Compartment 163: Use access provided by Risky Ranch Road, Benedict Road, and create temporary haul roads off these roads as needed.
  - Compartment 169: Use access provided by County Road, Benedict Road, Old Military Road, Henderson Road, and create temporary haul roads off these roads as needed.

### **Increase Cooperation with State and Local Governments and Private Land Owners on Management of the Area Road Infrastructure as it Relates to Forest Access**

Town Highways: Explore renewing 1973 Cooperative Road Agreement with the Town of Woodford and explore entering into a Cooperative Road Agreement with the Towns of Readsboro, Stamford, Bennington, and Pownal. Depending on success of any proposals for new trails, trail heads, parking areas, and aquatic passage culvert work, it may be in the interest of both the Forest Service and the respective Town to cooperate on any associated road improvement or maintenance needs where funding is available and there is a mutual interest.



### **Close Unauthorized Non-System Roads**

Close-off any unauthorized roads and skid trails at or near the main road entrance by: placing large boulders (or similar physical barrier); re-planting some native vegetation; and re-establishing the main road template and/or ditch-line as needed. Until the vegetation is established small, temporary travel management signing may be installed to discourage unauthorized use. Small, single car pull-off areas may be created (when needed) at existing unauthorized road entrances where the pull-off can be located by extending the shoulder of the main road (without cuts or fills) and where they will not be separated by ditches or drainage structures. Law enforcement and FS personnel would monitor the various locations for illegal use.

## **10. Heritage**

The Forest Service strives to meet the Forest Plan Heritage Resource Goal #16 (and Section 106 of the National Historic Preservation Act) by being proactive in promoting and enhancing Heritage resources, and protecting historic and archaeological sites which meet, or could meet, the criteria for inclusion on the National Register of Historic Places.

Proposed activities associated with heritage resources within the project area include the following:

- Investigate and inventory the Niles cemetery. Currently one stone (Polly Niles) is identified, but possible field stone markers also are visible. Clearing the ground vegetation, probing, and possible remote sensing techniques (e.g., ground-penetrating radar) could reveal more extensive remains which we would seek to protect.
- Create 'Down Woody Debris Habitat' in coordination with Wildlife biologists. This means brush and trees (generally small, non-merchantable saplings, poles and brush, and the occasional encroaching hardwood) growing in or near select historical sites would be cut and removed with hand tools. The cut vegetation would be left on site and placed in such a way as to provide nesting, foraging, and travel habitat for small mammals, reptiles and amphibians. This could be accomplished through partnerships, stewardship contracting and/or Vermont Youth Conservation Corps (VYCC) crews.
- Clean-up and stabilization of two sets of stone charcoal kiln remains in the northwestern part of the study area. This proposal consists primarily of the removal of small trees growing out of the remains of these significant industrial sites as well as removal of dead-and-down trees.
- Clean up and stabilization the historic mill and tavern remains located along the AT/LT north of the Stamford Stream wetlands. This is also an opportunity for an archaeological excavation and research incorporating volunteers.
- Encourage and work with local partners to produce a National Register nomination for the Old Stage Road (which defines the northern boundary of the study area) and to uncover and/or conduct more research on the Albany/Military Road (Pownal).
- Conduct prehistoric site inventory and research activity. The potential for the presence of prehistoric Native American sites is high in selected areas. We know of one large site along the AT/LT and have recovered one surface-find during broad-scale survey. Each of these merits further investigation.
- Finally, the Forest needs to determine whether there are any structural, landscape or archaeological remains of the Dutch Hill Ski Area which warrant preservation for their historic value; and to what extent the Dome is deemed significant by Native American tribes.

## Appendix A: Summary of Proposed Wildlife Habitat and Timber Management Treatments

<b>Table A-1: Proposed Wildlife Habitat Treatments.</b>				
<b>Apple tree/soft mast release and pruning:</b> Release and prune all apple trees throughout the stand.				
Comp	Stand	Acres	Treatment Acres	Additional Information
120	17	39	1	
120	29	5	1	Group of trees
127	20	42	1	Single tree by SnoPark
129	37	9	1	Single tree
129	56	47	1	Group of trees in NE corner along Old Stage Rd
129	59	5	1	Single tree
135	2	31	1	
135	5	3	1	
135	6	41	1	
148	43	12	1	Group of trees
165	17	49	1	
169	34	60	1	Single tree along Old Military Rd
169	101	1	1	Group of trees
<b>Total Acres</b>		<b>344</b>	<b>13</b>	
<b>Clearcut for aspen/birch regeneration (also included in Table A-2: Summary of Proposed Timber Treatments).</b>				
Comp	Stand	Acres	Treatment Acres	Additional Information
120	19	108	24	
120	29	5	5	
169	34	60	6	Retain scattered oak trees
<b>Total Acres</b>		<b>173</b>	<b>35</b>	
<b>Restore and/or maintain existing permanent upland opening:</b> Mechanical, mowing, hand cutting, and/or burning treatment methods.				
Comp	Stand	Acres	Treatment Acres	Additional Information
169	101	1	1	
<b>Total Acres</b>		<b>1</b>	<b>1</b>	
<b>Land clearing to create permanent upland opening (also included in Table A-2: Summary of Timber Treatments); Restore as needed:</b> Mowing, hand cutting and/or burning treatment methods.				
Comp	Stand	Acres	Treatment Acres	Additional Information
120	21	118	30	Ridgetop saddle and sideslope to the east.
120	31	52	29	Upper eastern side of hilltop.
128	25	106	11	Above Roaring Brook. Combine with S52 for one opening.
128	52	14	5	Borders Nunge Brook. Combine with S25 for one opening.
130	12	28	11	Near Howe Pond Brook meadow complex. Heritage Site.
130	19	40	3	Combine with S12 for one opening.
135	6	41	3	Near Risky Ranch Road.
138	14	15	15	Near Broad Brook.
148	37	19	19	South of powerline.
148	40	154	20	Along snowmobile trail.
148	43	12	12	Along County Road/Cowan Brook. Heritage site/apple trees.
148	44	209	16	Next to Roaring Branch.
165	18	13	13	Near South Branch Deerfield River.
165	29	57	4	West of Wiley Mountain Drive (TH19)/Dunbar Brook.
165	30	62	12	Combine with S29 and S37 for one opening.

**Table A-1: Proposed Wildlife Habitat Treatments.**

Comp	Stand	Acres	Treatment Acres	Additional Information
165	37	29	6	Combine with S29 and S30 for one opening.
169	1	318	8	Near County Road/Broad Brook.
180	8	118	20	Near Reservoir Brook/Stamford Pond.
<b>Total Acres</b>		<b>1405</b>	<b>237</b>	
<b>Create down woody debris habitat:</b> Cut and leave trees on site; scatter and/or pile debris for wildlife habitat.				
--	--	--	--	Stands found during project layout which include heritage sites that require vegetation cutting for restoration.
<b>Total Acres</b>		<b>--</b>	<b>--</b>	
<b>Enhance Blueberries:</b> Prescribed fire treatments to regenerate blueberries.				
Comp	Stand	Acres	Treatment Acres	Additional Information
120	19	4	4	Old Dutch Hill Ski Slopes
<b>Total Acres</b>		<b>4</b>	<b>4</b>	

**Table A-2: Proposed Timber Harvest Treatments**

<b>Compartment 120</b>				
Stand	Acres	Forest Type	Harvest Method	Harvest Acres
5	16	Hardwood	Shelterwood with Reserves	16
7	59	Mixedwood	Single Tree and Group Selection	59
12	173	Hardwood	Single Tree and Group Selection	122
13	20	Hardwood	Overstory Removal	20
16	31	Mixedwood	Improvement Cut	31
17	39	Mixedwood	Single Tree and Group Selection	39
19	108	Hardwood	Clearcut for aspen-birch	24
19	108	Hardwood	Improvement Cut	57
19	108	Hardwood	Two-cut Shelterwood	26
20	22	Hardwood	Improvement Cut w/Groups	22
21	118	Hardwood	Group Selection in two blocks	47
21	118	Hardwood	Seed-tree Cut	15
21	118	Hardwood	Improvement Cut	23
21	118	Hardwood	Land Clearing for Permanent Wildlife Opening	30
26	75	Hardwood	Clearcut	17
26	75	Hardwood	Group Selection in two blocks	41
26	75	Hardwood	Two-cut Shelterwood	17
29	5	Hardwood	Clearcut for aspen-birch	5
31	52	Hardwood	Land Clearing for Permanent Wildlife Opening	29
31	52	Hardwood	Improvement Cut w/Groups	18
31	52	Hardwood	Clearcut	5
32	50	Hardwood	Group Selection	50
34	114	Hardwood	Group Selection	84
34	114	Hardwood	Two-cut Shelterwood	30
36	6	Mixedwood	Thinning	6
37	7	Hardwood	Two-cut Shelterwood	7
40	22	Hardwood	Improvement Cut	22
42	63	Hardwood	Single Tree and Group Selection	63
43	87	Hardwood	Two-cut Shelterwood	29
43	87	Hardwood	Group Selection	23
43	87	Hardwood	Improvement Cut w/Groups	20
44	26	Hardwood	Single Tree and Group Selection	26

<b>Compartment 125</b>				
<b>Stand</b>	<b>Acres</b>	<b>Forest Type</b>	<b>Harvest Method</b>	<b>Harvest Acres</b>
4	17	Softwood	Single Tree and Group Selection	17
5	24	Hardwood	Single Tree and Group Selection	24
6	54	Hardwood	Single Tree and Group Selection	54
7	9	Hardwood	Single Tree and Group Selection	9
9	26	Hardwood	Single Tree and Group Selection	26
10	20	Hardwood	Single Tree and Group Selection	20
<b>Compartment 127</b>				
<b>Stand</b>	<b>Acres</b>	<b>Forest Type</b>	<b>Harvest Method</b>	<b>Harvest Acres</b>
1	82	Hardwood	Group Selection	37
2	66	Hardwood	Thinning	66
4	31	Hardwood	Two-cut Shelterwood	31
7	6	Hardwood	Two-cut Shelterwood	6
8	56	Hardwood	Thinning	56
11	35	Hardwood	Thinning	35
14	55	Hardwood	Group Selection	55
15	22	Hardwood	Clearcut	22
19	27	Hardwood	Two-cut Shelterwood	27
20	42	Mixedwood	Improvement Cut	42
21	8	Hardwood	Improvement Cut	8
22	86	Hardwood	Group Selection	86
23	55	Hardwood	Single Tree and Group Selection	55
33	75	Hardwood	Improvement Cut w/Groups	75
<b>Compartment 128</b>				
<b>Stand</b>	<b>Acres</b>	<b>Forest Type</b>	<b>Harvest Method</b>	<b>Harvest Acres</b>
22	34	Hardwood	Two-cut Shelterwood	17
22	34	Hardwood	Group Selection	17
23	48	Hardwood	Improvement Cut w/Groups	48
24	33	Hardwood	Two-cut Shelterwood	13
24	33	Hardwood	Group Selection	20
25	106	Hardwood	Two-cut Shelterwood	16
25	106	Hardwood	Group Selection	77
25	106	Hardwood	Land Clearing for Permanent Wildlife Opening	11
27	43	Hardwood	Two-cut Shelterwood	16
27	43	Hardwood	Group Selection	26
29	34	Hardwood	Two-cut Shelterwood	18
29	34	Hardwood	Group Selection	16
31	27	Hardwood	Group Selection	27
33	8	Hardwood	Sanitation Cut	8
38	15	Mixedwood	Two-cut Shelterwood	15
39	39	Hardwood	Two-cut Shelterwood	14
39	39	Hardwood	Improvement Cut	26
47	26	Softwood	Single Tree and Group Selection	26
52	14	Hardwood	Land Clearing for Permanent Wildlife Opening	5
53	43	Hardwood	Thinning	43

<b>Compartment 130</b>				
<b>Stand</b>	<b>Acres</b>	<b>Forest Type</b>	<b>Harvest Method</b>	<b>Harvest Acres</b>
4	58	Hardwood	Improvement Cut w/Groups	58
7	31	Hardwood	Improvement Cut	12
7	31	Hardwood	Group Selection	19
9	62	Hardwood	Single Tree and Group Selection	62
10	37	Hardwood	Two-cut Shelterwood	17
10	37	Hardwood	Improvement Cut	20
11	39	Hardwood	Two-cut Shelterwood	19
11	39	Hardwood	Group Selection	19
12	28	Hardwood	Land Clearing for Permanent Wildlife Opening	11
12	28	Hardwood	Group Selection	17
13	38	Hardwood	Group Selection	38
18	71	Hardwood	Single Tree and Group Selection	71
19	40	Mixedwood	Land Clearing for Permanent Wildlife Opening	3
20	20	Hardwood	Two-cut Shelterwood	20
25	29	Hardwood	Single Tree and Group Selection	29
<b>Compartment 135</b>				
<b>Stand</b>	<b>Acres</b>	<b>Forest Type</b>	<b>Harvest Method</b>	<b>Harvest Acres</b>
1	6	Hardwood	Thinning	6
2	31	Hardwood	Two-cut Shelterwood	20
2	31	Hardwood	Group Selection	11
4	6	Hardwood	Single Tree and Group Selection	6
5	3	Hardwood	Two-cut Shelterwood	3
6	41	Mixedwood	Land Clearing for Permanent Wildlife Opening	3
7	24	Hardwood	Two-cut Shelterwood	24
8	4	Hardwood	Shelterwood w/Reserves	4
<b>Compartment 138</b>				
<b>Stand</b>	<b>Acres</b>	<b>Forest Type</b>	<b>Harvest Method</b>	<b>Harvest Acres</b>
1	34	Hardwood	Clearcut	14
1	34	Hardwood	Group Selection	20
2	21	Hardwood	Improvement Cut	21
3	16	Hardwood	Seed-tree Cut	16
4	5	Hardwood	Thinning	5
6	27	Hardwood	Clearcut	12
6	27	Hardwood	Group Selection	14
9	8	Hardwood	Clearcut	8
10	24	Hardwood	Group Selection	24
14	15	Hardwood	Land Clearing for Permanent Wildlife Opening	15
<b>Compartment 148</b>				
<b>Stand</b>	<b>Acres</b>	<b>Forest Type</b>	<b>Harvest Method</b>	<b>Harvest Acres</b>
2	51	Hardwood	Single Tree and Group Selection	51
3	26	Hardwood	Single Tree and Group Selection	26
4	32	Hardwood	Single Tree and Group Selection	32
6	67	Hardwood	Single Tree and Group Selection	67
7	15	Hardwood	Single Tree and Group Selection	15
8	60	Hardwood	Single Tree and Group Selection	60
12	27	Hardwood	Single Tree and Group Selection	27
13	21	Hardwood	Single Tree and Group Selection	21
16	55	Hardwood	Single Tree and Group Selection	55
17	57	Hardwood	Improvement Cut	57
18	50	Hardwood	Single Tree and Group Selection	50

<b>Compartment 148</b>				
<b>Stand</b>	<b>Acres</b>	<b>Forest Type</b>	<b>Harvest Method</b>	<b>Harvest Acres</b>
20	64	Hardwood	Improvement Cut	64
24	33	Hardwood	Group Selection	33
26	20	Hardwood	Group Selection	20
27	11	Hardwood	Group Selection	11
28	76	Hardwood	Improvement Cut	76
31	35	Hardwood	Single Tree and Group Selection	35
37	19	Hardwood	Land Clearing for Permanent Wildlife Opening	19
39	31	Hardwood	Thinning	31
40	154	Hardwood	Land Clearing for Permanent Wildlife Opening	20
40	154	Hardwood	Group Selection in three blocks	80
40	154	Hardwood	Thinning in three blocks	34
40	154	Hardwood	Two-cut Shelterwood	20
41	30	Hardwood	Two-cut Shelterwood	17
41	30	Hardwood	Group Selection	12
43	12	Hardwood	Land Clearing for Permanent Wildlife Opening	12
44	209	Hardwood	Group Selection	193
44	209	Hardwood	Land Clearing for Permanent Wildlife Opening	16
45	83	Hardwood	Single Tree and Group Selection	83
50	10	Hardwood	Thinning	10
51	34	Hardwood	Group Selection	34
56	25	Hardwood	Two-cut Shelterwood	25
57	57	Hardwood	Improvement Cut	57
59	58	Hardwood	Single Tree and Group Selection	58
62	42	Hardwood	Group Selection	42
63	12	Hardwood	Single Tree and Group Selection	12
65	17	Hardwood	Single Tree and Group Selection	17
66	14	Hardwood	Single Tree and Group Selection	14
<b>Compartment 163</b>				
<b>Stand</b>	<b>Acres</b>	<b>Forest Type</b>	<b>Harvest Method</b>	<b>Harvest Acres</b>
2	104	Hardwood	Single Tree and Group Selection	104
7	39	Hardwood	Group Selection	39
8	20	Hardwood	Improvement Cut	20
9	91	Hardwood	Shelterwood w/Reserves in two blocks	39
9	91	Hardwood	Improvement Cut	52
12	230	Hardwood	Single Tree and Group Selection	229
16	4	Hardwood	Thinning	4
18	29	Hardwood	Thinning	29
26	242	Hardwood	Thinning	242
29	9	Hardwood	Thinning	9
<b>Compartment 165</b>				
<b>Stand</b>	<b>Acres</b>	<b>Forest Type</b>	<b>Harvest Method</b>	<b>Harvest Acres</b>
2	24	Hardwood	Clearcut	24
5	22	Mixedwood	Improvement Cut w/Groups, softwood release	22
7	13	Hardwood	Two-cut Shelterwood	13
8	28	Hardwood	Improvement Cut w/Groups	28
11	29	Hardwood	Improvement Cut w/Groups	29
13	37	Hardwood	Two-cut Shelterwood	37
14	13	Hardwood	Improvement Cut w/Groups	13
15	45	Hardwood	Improvement Cut w/Groups	45
17	49	Softwood	Improvement Cut w/Groups, softwood/oak release	49
18	13	Hardwood	Land Clearing for Permanent Wildlife Opening	13

Compartiment 165				
Stand	Acres	Forest Type	Harvest Method	Harvest Acres
20	26	Mixedwood	Thinning	26
29	57	Softwood	Land Clearing for Permanent Wildlife Opening	4
30	62	Hardwood	Land Clearing for Permanent Wildlife Opening	12
37	29	Hardwood	Land Clearing for Permanent Wildlife Opening	6
39	50	Mixedwood	Group Selection	50
44	8	Hardwood	Improvement Cut	8
45	22	Mixedwood	Overstory Removal, softwood release	22
Compartiment 169				
Stand	Acres	Forest Type	Harvest Method	Harvest Acres
1	318	Hardwood	Improvement Cut w/Groups	310
1	318	Hardwood	Land Clearing for Permanent Wildlife Opening	8
10	20	Hardwood	Two-cut Shelterwood	20
11	36	Hardwood	Single Tree and Group Selection	36
13	32	Hardwood	Group Selection	32
15	25	Hardwood	Thinning from below to enhance oak	25
16	92	Hardwood	Improvement Cut w/Groups	92
17	34	Hardwood	Improvement Cut w/Groups	34
22	47	Hardwood	Improvement Cut	47
23	105	Hardwood	Improvement Cut w/Groups	105
24	14	Hardwood	Two-cut Shelterwood	14
25	8	Hardwood	Single Tree and Group Selection	8
30	52	Hardwood	Two-cut Shelterwood	18
30	52	Hardwood	Thinning	20
32	171	Hardwood	Group Selection	71
32	171	Hardwood	Two-cut Shelterwood in two blocks	38
32	171	Hardwood	Improvement Cut in two blocks	62
33	43	Hardwood	Improvement Cut	43
34	60	Hardwood	Single Tree and Group Selection	37
34	60	Hardwood	Clearcut for aspen-birch	6
34	60	Hardwood	Two-cut Shelterwood	17
35	21	Hardwood	Thinning from below to enhance oak	21
37	76	Hardwood	Thinning from below to enhance oak	76
38	76	Hardwood	Thinning from below to enhance oak	76
Compartiment 180				
Stand	Acres	Forest Type	Harvest Method	Harvest acres
				PA
8	118	Hardwood	Land Clearing for Permanent Wildlife Opening	20
<b>Total Stand Acres:</b>			<b>10,585 acres</b>	
<b>Total Harvest Acres:</b>			<b>6,784 acres</b>	

Table A-3: Summary of Proposed Timber Harvest Treatments	
Summary of Proposed Harvest Treatments	Harvest Acres
<b>Uneven-Aged Harvest Treatments</b>	
<b>Single Tree Selection with gaps</b>	
Hardwood Single Tree Selection with gaps to regenerate uneven-aged hardwoods and mixedwoods	1,604
Mixedwood Single Tree Selection with gaps to regenerate uneven-aged mixedwoods and softwoods	98
Softwood Single Tree Selection with gaps to regenerate uneven-aged softwoods	43
<b>Total Single Tree Selection with gaps</b>	<b>1,745</b>
<b>Improvement Cut with gaps</b>	
Hardwood Improvement Cut with gaps to regenerate uneven-aged hardwoods and mixedwoods	897
Mixedwood Improvement Cut with gaps to regenerate an uneven-aged mixedwood stand	22
Softwood Improvement Cut with gaps to regenerate an uneven-aged softwood stand	49
<b>Total Improvement Cut with gaps</b>	<b>968</b>
<b>Group Selection</b>	
Hardwood Group Selection to regenerate uneven-aged hardwoods and mixedwoods	1,264
Mixedwood Group Selection to regenerate uneven-aged mixedwoods	50
Oak Group Selection to regenerate uneven-aged oaks	71
<b>Total Group Selection</b>	<b>1,385</b>
<b>Intermediate Harvest Treatments</b>	
<b>Thinning</b>	
Hardwood Thinning to improve composition, growth and spacing	590
Mixedwood Thinning to improve composition, growth and spacing	32
Oak Thinning to improve composition, growth and spacing	198
<b>Total Thinning</b>	<b>820</b>
<b>Improvement Cuts</b>	
Hardwood Improvement Cut to improve stand health	570
Mixedwood Improvement Cut to improve stand health	73
Oak Improvement Cut to improve stand health	105
<b>Total Improvement Cuts</b>	<b>748</b>
<b>Sanitation Cut</b>	
Hardwood Sanitation cut to address defect and disease	8
<b>Total Sanitation</b>	<b>8</b>
<b>Even-Aged Harvest Treatments</b>	
<b>Two-cut Shelterwood</b>	
Hardwood Two-cut Shelterwood	551
Mixedwood Two-cut Shelterwood	15
Oak Two-cut Shelterwood	38
<b>Total Two-cut Shelterwood</b>	<b>604</b>
<b>Shelterwood with Reserves</b>	
Hardwood Shelterwood with Reserves to regenerate even-aged hardwoods	59
<b>Total Shelterwood with Reserves</b>	<b>59</b>
<b>Overstory Removal Cut</b>	
Hardwood Overstory Removal Cut to release young softwood saplings and small trees	20
Mixedwood Overstory Removal Cut to release young mixedwood saplings and small trees	22



<b>Even-Aged Harvest Treatments continued</b>	
<b>Total Overstory Removal Cut</b>	<b>42</b>
<b>Seed Tree</b>	
Hardwood Seed Tree cut to regenerate even-aged hardwoods	31
<b>Total Seed Tree</b>	<b>31</b>
<b>Clearcut</b>	
Hardwood Clearcut to regenerate aspen and/or birch	35
Hardwood Clearcut to regenerate hardwoods	102
<b>Total Clearcut</b>	<b>137</b>
<b>Convert to Openings</b>	
<b>Land Clearing to Convert Forest to Openings</b>	
Hardwood Land Clearing to convert stand into a permanent upland wildlife opening	227
Mixedwood Land Clearing to convert stand into a permanent upland wildlife opening	6
Softwood Land Clearing to convert stand into a permanent upland wildlife opening	4
<b>Total Land Clearing to Convert Forest to Openings</b>	<b>237</b>
<b>Totals</b>	
<b>Total Uneven-aged Harvest Treatment</b>	<b>4,098 acres</b>
<b>Total Intermediate Harvest Treatment</b>	<b>1,576 acres</b>
<b>Total Even-aged Harvest Treatment</b>	<b>873 acres</b>
<b>Total Land Clearing</b>	<b>237 acres</b>
<b>TOTAL HARVEST TREATMENT</b>	<b>6,784 acres</b>

**Table A-4: Summary of Proposed Timber Stand Improvement (TSI). A pre-commercial treatment that thins out sapling/pole sized trees (smaller than merchantable size)**

<b>Compartment 125</b>				
<b>Stand</b>	<b>Stand Acres</b>	<b>Forest Type</b>	<b>Treatment Method</b>	<b>Treatment Acres</b>
11	13	Hardwood	Crop tree release	13
<b>Compartment 127</b>				
<b>Stand</b>	<b>Stand Acres</b>	<b>Forest Type</b>	<b>Treatment Method</b>	<b>Treatment Acres</b>
3	34	Hardwood	Crop tree release	34
<b>Compartment 169</b>				
<b>Stand</b>	<b>Stand Acres</b>	<b>Forest Type</b>	<b>Treatment Method</b>	<b>Treatment Acres</b>
4	11	Hardwood	Crop tree release	11
<b>Compartment 180</b>				
<b>Stand</b>	<b>Stand Acres</b>	<b>Forest Type</b>	<b>Treatment Method</b>	<b>Treatment Acres</b>
9	29	Hardwood	Crop tree release	29
<b>Total Stand Acres</b>				<b>87</b>
<b>Total Timber Stand Improvement Treatment</b>				<b>87</b>

**Table A-5: Summary of Reforestation Activities. Site Preparation for Natural Regeneration or Artificial Regeneration following all regeneration harvests and tree planting.**

<b>Forest Type</b>	<b>Proposed Action (acres)</b>
Hardwood	4,672
Mixedwood	207
Softwood	92
<b>Total Acres</b>	<b>4,971</b>
<b>Tree Planting</b>	
American chestnut	100+ seedlings

**Table A-6: Proposed Prescribed Fire Treatment.**

<b>Prescribed Fire.</b>				
<b>Comp</b>	<b>Stand</b>	<b>Acres</b>	<b>Treatment Acres</b>	<b>Additional Information</b>
169	26	267	208	Prescribed fire to maintain and enhance dry oak forest, dry oak woodland, and heath opening habitat
169	36	39	39	Prescribed fire to maintain and enhance dry oak forest, dry oak woodland, and heath opening habitat
<b>Total Acres</b>		<b>306</b>	<b>247</b>	